

TAMARAC

NATIONAL WILDLIFE REFUGE

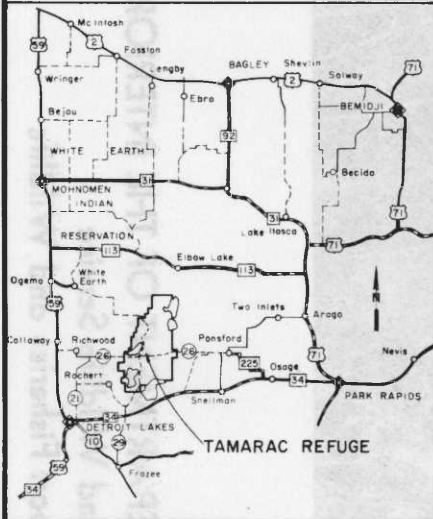
BECKER COUNTY MINNESOTA



UNITED STATES DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Bureau of Sport Fisheries and Wildlife

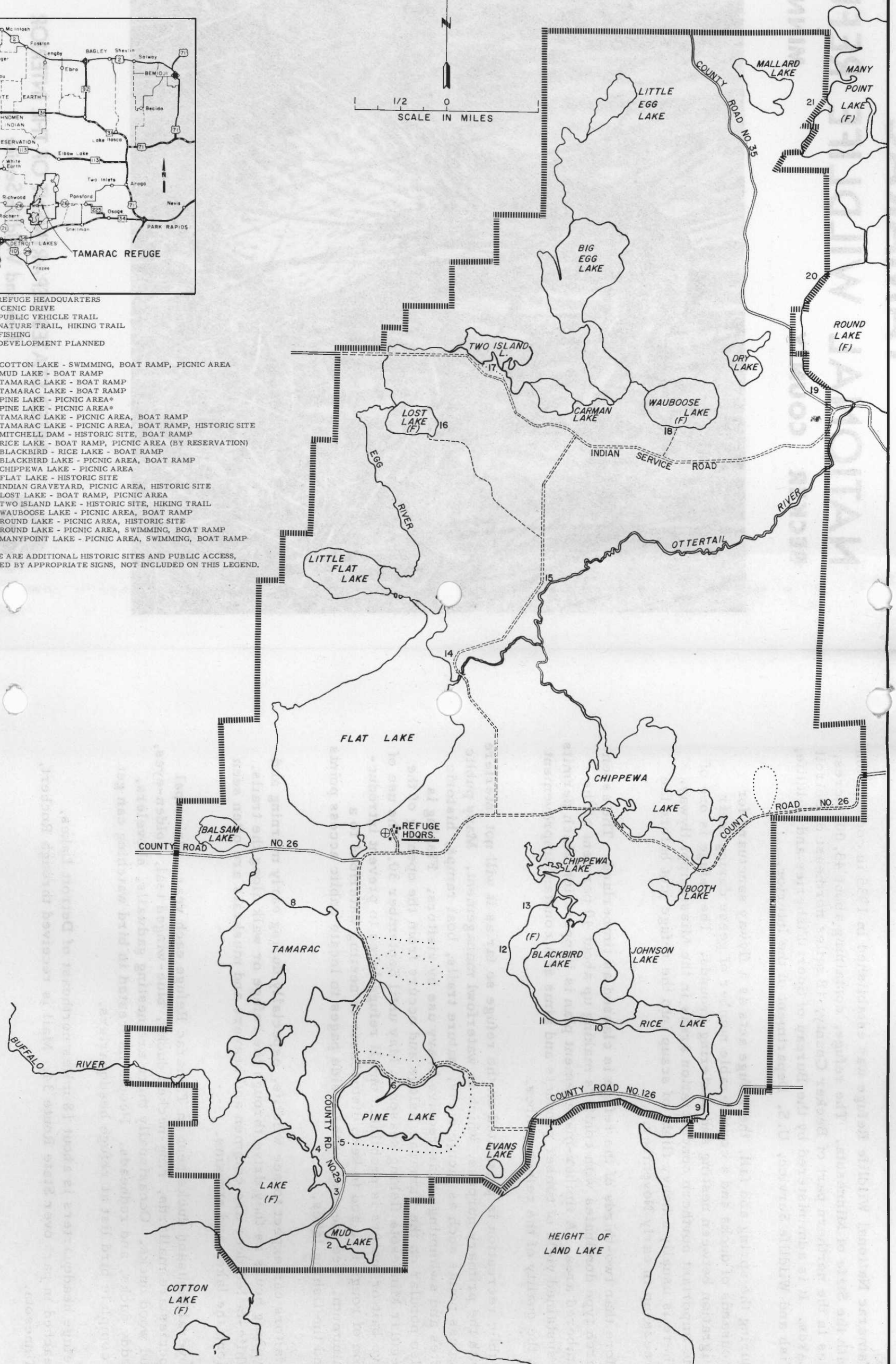
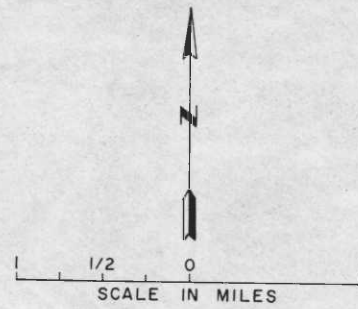


TAMARAC NATIONAL WILDLIFE REFUGE



- @ REFUGE HEADQUARTERS
 --- SCENIC DRIVE
 --- PUBLIC VEHICLE TRAIL
 ... NATURE TRAIL, HIKING TRAIL
 (F) FISHING
 * DEVELOPMENT PLANNED
- 1 COTTON LAKE - SWIMMING, BOAT RAMP, PICNIC AREA
 - 2 MUD LAKE - BOAT RAMP
 - 3 TAMARAC LAKE - BOAT RAMP
 - 4 TAMARAC LAKE - BOAT RAMP
 - 5 PINE LAKE - PICNIC AREA*
 - 6 PINE LAKE - PICNIC AREA*
 - 7 TAMARAC LAKE - PICNIC AREA, BOAT RAMP
 - 8 TAMARAC LAKE - PICNIC AREA, BOAT RAMP, HISTORIC SITE
 - 9 MITCHELL DAM - HISTORIC SITE, BOAT RAMP
 - 10 RICE LAKE - BOAT RAMP, PICNIC AREA (BY RESERVATION)
 - 11 BLACKBIRD - RICE LAKE - BOAT RAMP
 - 12 BLACKBIRD LAKE - PICNIC AREA, BOAT RAMP
 - 13 CHIPPEWA LAKE - PICNIC AREA
 - 14 FLAT LAKE - HISTORIC SITE
 - 15 INDIAN GRAVEYARD, PICNIC AREA, HISTORIC SITE
 - 16 LOST LAKE - BOAT RAMP, PICNIC AREA
 - 17 TWO ISLAND LAKE - HISTORIC SITE, HIKING TRAIL
 - 18 WAUBOOSE LAKE - PICNIC AREA, BOAT RAMP
 - 19 ROUND LAKE - PICNIC AREA, HISTORIC SITE
 - 20 ROUND LAKE - PICNIC AREA, SWIMMING, BOAT RAMP
 - 21 MANYPOINT LAKE - PICNIC AREA, SWIMMING, BOAT RAMP

THERE ARE ADDITIONAL HISTORIC SITES AND PUBLIC ACCESS, MARKED BY APPROPRIATE SIGNS, NOT INCLUDED ON THIS LEGEND.



Tamarac National Wildlife Refuge was established in 1935 in cooperation with the State of Minnesota. The refuge, containing about 43,000 acres, lies in the northern part of Becker County, 18 miles northeast of Detroit Lakes. It is administered by the Bureau of Sport Fisheries and Wildlife, Fish and Wildlife Service, U.S. Department of the Interior.

During the spring and fall, the refuge acts as a flyway sanctuary for thousands of ducks and a considerable number of geese during their migration between nesting and wintering grounds. The refuge is one of the important northern concentration areas in the Mississippi flyway. There is usually a heavy flight of scaup into the refuge just before the freeze-up in early November.

More than two-thirds of the refuge is classed as timberland. The aspen-birch type dominates with conifers making up about 40 per cent of the timbered area. A timber-management plan is in operation which permits a sustained yield of timber products and aims at a constant improvement in the quality of the refuge timber.

Public recreation is permitted on the refuge so far as it will not interfere with the primary purpose, which is waterfowl management. Many public access points such as picnic spots, nature trails, boat ramps, historic sites and swimming areas receive heavy use by visitors. Fishing is also popular on the Tamarac Refuge and occurs from the opening of the regular Minnesota fishing season in May until September 30. The use of live bait or motors is prohibited on all refuge lakes to prevent introduction of rough fish and to keep disturbance to nesting waterfowl to a minimum. See the map on the inside pages to locate public access points and the fishing lakes.

Visitors can expect to see wildlife, especially during early morning and evening hours as they drive through the refuge or walk along the trails. White-tailed deer are common and beavers and muskrats are often seen along the lakes and streams.

Several thousand ducks nest on Tamarac Refuge each year. Principal species are mallards, ring-necked ducks, blue-winged teal, golden-eyes, and wood ducks. Occasionally there are nesting gadwalls, shovelers, ruddy ducks, and redheads. People interested in bird watching can get a complete bird list at refuge headquarters.

Refuge headquarters is about 18 miles northeast of Detroit Lakes, reached in part over State Route 34. Mail is received through Rochert, Minnesota.

TAMARAC NATIONAL WILDLIFE REFUGE

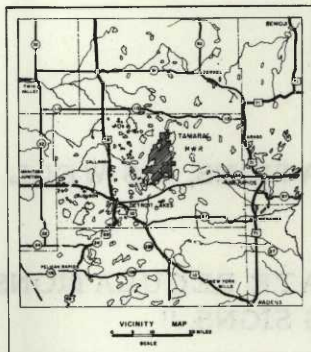
BECKER COUNTY, MINNESOTA

UNITED STATES
DEPARTMENT OF THE INTERIOR
95°45'

R 40 W R 39 W

R 39 W R 38 W

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
95°30'



- Open year around in accordance with State regulations
- Open during summer when access is provided
- Public access points
- Open only when posted as such
- See back of map

T 142 N
T 141 N

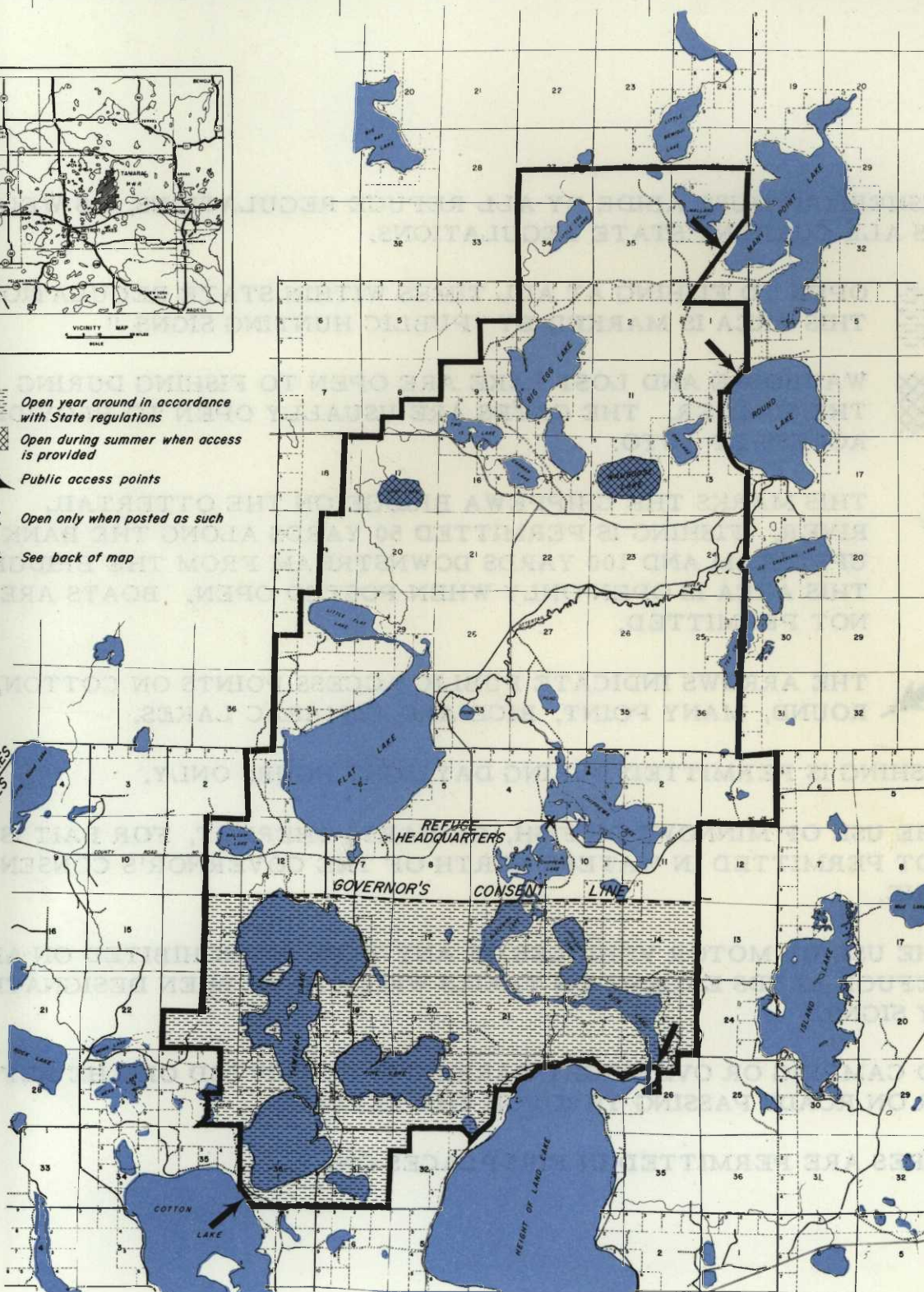
T 142 N
T 141 N

47°00'
T 141 N
T 140 N

47°00'
T 141 N
T 140 N

46°55'
T 140 N
T 139 N

46°55'
T 140 N
T 139 N



COMPILED IN THE BRANCH OF ENGINEERING
FROM AERIAL PHOTOGRAPHS AND SURVEYS
BY U.S.G.S, G.L.O. AND B.S.F.W.

MINNEAPOLIS, MINNESOTA

JANUARY 1962

R 40 W R 39 W

R 39 W R 38 W





95°30'

FIFTH PRINCIPAL MERIDIAN

Scale 0 40 80 160 240 320 CHAINS
0 1/2 1 2 3 4 MILES

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

TOWNSHIP
DIAGRAM

1. FISHERMAN MUST ABIDE BY ALL REFUGE REGULATIONS, AS WELL AS ALL CURRENT STATE REGULATIONS.
2.  OPEN TO FISHING AT ALL TIMES WITHIN STATE REGULATIONS. THIS AREA IS MARKED BY "PUBLIC HUNTING SIGNS."
3.  WAUBOOSE AND LOST LAKE ARE OPEN TO FISHING DURING THE SUMMER. THE GATES ARE USUALLY OPEN TO PROVIDE ACCESS BY AUTO.
4.  THIS MARKS THE CHIPPEWA BRIDGE ON THE OTTERTAIL RIVER. FISHING IS PERMITTED 50 YARDS ALONG THE BANK UPSTREAM AND 100 YARDS DOWNSTREAM FROM THE BRIDGE. THIS AREA IS OPEN ONLY WHEN POSTED OPEN. BOATS ARE NOT PERMITTED.
5.  THE ARROWS INDICATE PUBLIC ACCESS POINTS ON COTTON, ROUND, MANY POINT, RICE AND TAMARAC LAKES.
6. FISHING IS PERMITTED DURING DAYLIGHT HOURS ONLY.
7. THE USE OF MINNOWS OR FISH, OR PARTS THEREOF, FOR BAIT IS NOT PERMITTED IN WATERS NORTH OF THE GOVERNOR'S CONSENT LINE.
8. THE USE OF MOTOR VEHICLES OF ANY TYPE IS PROHIBITED ON ALL REFUGE LANDS EXCEPT ON TRAILS WHICH HAVE BEEN DESIGNATED BY SIGNS.
9. NO CAMPING OR OVERNIGHT PARKING IS PERMITTED ON THE REFUGE OR ON ROADS PASSING THROUGH THE REFUGE.
10. FIRES ARE PERMITTED IN FIREPLACES ONLY.

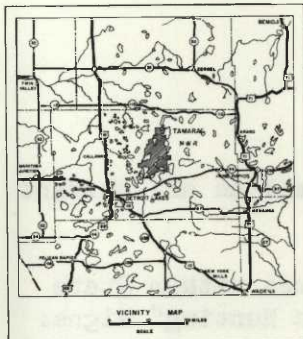
TAMARAC NATIONAL WILDLIFE REFUGE

BECKER COUNTY, MINNESOTA

UNITED STATES
DEPARTMENT OF THE INTERIOR
95°45'

R40W R39W

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
R39W R38W 95°30'



SEE BACK OF MAP

- PUBLIC ROADS
- OPEN TO PUBLIC HUNTING
WITHIN STATE REGULATIONS
- ▨ OPEN ONLY FOR STATE
FIREARMS DEER SEASON
- CLOSED TO ALL HUNTING

T
142
N

T
141
N

47°00'

T
141
N

T
140
N

46°55'

T
140
N

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139
N

T
142
N

T
141
N

47°00'

T
141
N

T
140
N

46°55'

T
140
N

T
139
N

DETROIT LAKES
13.0 MILES

R40W R39W

95°35' R39W R38W 95°30'

COMPILED IN THE BRANCH OF ENGINEERING
FROM AERIAL PHOTOGRAPHS AND SURVEYS
BY U.S.G.S., G.L.O. AND B.S.F.W.

MINNEAPOLIS, MINNESOTA

JANUARY 1962

FIFTH PRINCIPAL MERIDIAN

Scale 0 40 80 160 240 320 CHAINS
0 1/2 1 2 3 4 MILES



6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

TOWNSHIP
DIAGRAM

TRUE NORTH
MAGNETIC N


MEAN
DECLINATION
1960

HUNTING REGULATIONS

1. Hunters must abide by all refuge regulations, as well as all current State regulations.
2.  Open to all types of public hunting at all times within State regulations. This area is marked with "Public Hunting" signs.
3.  Open only for the State firearms deer season and only for the purpose of taking deer and bear. No other wildlife may be taken in this area at any time.

Hunters will not be permitted to enter before 6:00 A.M. and must leave by 6:00 P.M. (Central Standard Time).

The public is not allowed in this area at any other time.

4.  This area is closed to all types of hunting at all times.
5. The public must also abide by all "Closed Area" signs within the open areas, such as around residences.
6. The use of motor vehicles of any type is prohibited on all refuge lands except on trails which have been opened to the public.
7. No camping or overnight parking is permitted on the refuge or on roads passing through the refuge.
8. Fires are permitted in fireplaces only.
9. Hunters must agree to inspection of deer livers, weighing of deer, and examination of deer teeth, if requested.

TAMARAC NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

1966

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES AND WILDLIFE

ROCHERT, MINNESOTA, 56578

REFUGE PERSONNEL

Robley W. Hunt	Refuge Manager (Retired July 66)
Nelius B. Nelson	Refuge Manager 7/20/66
James E. Frates	Assistant Refuge Manager 2/1/66
Wayne D. Schmidt	Refuge Clerk Transferred to Job Corps in Feb 66
Stanley E. Christensen	Refuge Clerk 6/19/66
James L. Stillings	Wildlife Technician
Robert K. Seemel	Forester

TEMPORARY EMPLOYEES

David A. Annette	Operator, General
Clifford C. Boswell	Laborer
Thomas W. Jones	Maintenanceman
Ned L. Larson	Tractor Operator
Robert E. Nagel	Student Wildlife Aid
Carl G. Peterson	Tractor Operator
Charles Stone	Maintenanceman
Carroll J. Zietlow	Student Forester

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I. GENERAL

A. Weather Conditions.

	Month	Precipitation		Max.	Min.
		Normal	Snowfall	Temp.	Temp.
January	<u>.37</u>	<u>.71</u>	<u>5</u>	<u>23</u>	<u>-41</u>
February	<u>.67</u>	<u>.68</u>	<u>5</u>	<u>38</u>	<u>-31</u>
March	<u>1.03</u>	<u>.99</u>	<u>15</u>	<u>57</u>	<u>-22</u>
April	<u>1.75</u>	<u>2.02</u>	<u>9</u>	<u>62</u>	<u>14</u>
May	<u>.93</u>	<u>2.99</u>	<u>Trace</u>	<u>80</u>	<u>19</u>
June	<u>2.28</u>	<u>3.79</u>	<u> </u>	<u>91</u>	<u>33</u>
July	<u>4.67</u>	<u>3.58</u>	<u> </u>	<u>92</u>	<u>48</u>
August	<u>4.91</u>	<u>3.75</u>	<u> </u>	<u>87</u>	<u>41</u>
September	<u>.33</u>	<u>1.96</u>	<u> </u>	<u>85</u>	<u>25</u>
October	<u>2.24</u>	<u>1.37</u>	<u> </u>	<u>80</u>	<u>15</u>
November	<u>.14</u>	<u>3.00</u>	<u>2</u>	<u>52</u>	<u>-9</u>
December	<u>.39</u>	<u>.75</u>	<u>6</u>	<u>38</u>	<u>.21</u>
Annual Totals	<u>19.71</u>	<u>25.59</u>	<u>42</u> Extremes	<u>92</u>	<u>-41</u>

During January besides the frequent snowfalls, temperatures dropped below zero every night except for three nights. The February weather improved considerably, however, most of the night temperatures were below zero. March was quite a reverse of the two previous months as far as temperatures were concerned; snowfall was fifteen inches but the warm temperatures caused much of the snow to melt during the month. During the first three months in 1965 the total snowfall was 3.5 inches compared to 25 inches this year.

March 2nd to the 5th added an additional fifteen inches of snow during the three-day blizzard.

The warm temperatures in April made possible the best "sugaring" in eight years. Another five inches of heavy wet snow fell the 26th through the 28th.

Rainfall for the entire year was nearly six inches below normal. However, rainfalls in July and August when most needed was above average. September was the driest month as far as moisture needed for optimum wildlife habitat conditions. A short period in June was dry before a good rain fell on the 25th.

The fall weather was ideal for accomplishing much outdoor work. Precipitation was below normal and temperatures slightly below or near normal during November and December.

B. HABITAT CONDITIONS:

1. Water

The excellent water conditions of 1965 continued through 1966. The potholes in July and August were filled from frequent heavy rains, resulting in Spring-time water level conditions. Depressions in the uplands including in the timbered areas were very attractive to waterfowl.

Elevation readings on lakes with controls were as follows:

	<u>Chippewa</u>	<u>Flat Lake</u>	<u>Two Island</u>
Jan.	1461.80 (ice)	1468.84 (ice)	1484.40 (ice)
Feb.	1461.80 (ice)	1468.84 (ice)	1484.40 (ice)
Mar.	1461.27	1468.82	1484.25
April	1461.05	1469.30	1484.95
May	1461.60	1469.37	1484.58
June	1461.48	1468.75	1483.65
July	1461.00	1468.25	1483.60
Aug.	1461.65	1468.85	1484.00
Sept.	1461.65	1468.77	1483.85
Oct.	1461.77	1469.12	1483.95
Nov.	1461.28 (ice)	1469.40 (ice)	1484.14 (ice)
Dec.	1461.28 (ice)	1469.40 (ice)	1484.14 (ice)
Approved Level	1461.0	1467.5	1484.0

Chippewa: Chippewa Lake varied from the approved level on 1461.00 to 1461.80. Water levels were somewhat higher than the approved level during most of the year, however, we attempt to raise the lake approximately 6 inches from the approved level just prior to the ricing season each year.

We received an abnormally excessive flow into the Chippewa chain during late summer due to the fact that vandals pulled all logs from the Round Lake outlet on the Ottertail River. Had it happened earlier, we might possibly have had considerable damage to the rice crop. This sort of thing should pose no problem in the future since the new Rice Lake control will enable us to release a considerable amount of water from the Chippewa station without danger to the rice beds in Rice Lake.

Flat Lake: With the present control on Flat Lake, we are limited in the amount of water we can release to sufficiently lower such a large body of water. We should be able to maintain the approved level in 1967 with the new control constructed this past year.

The water level varied from .75' to 1.90' above the approved level. Despite the apparant high water conditions, an excellent crop of rice was harvested from both Big and Little Flat.

Two Island Lake: Water levels in Two Island varied from .40' below to .95' above the approved level. Beaver activity on the Egg River in July and August caused levels to drop prior to the ricing season, thus making boat travel extremely difficult for the ricers. We have been trapping in the area in hopes of adequately controlling the beaver before spring.

Balsam: Floating bog has choked the Balsam control, but attempts will be made to correct the situation this winter.

Dry Lake: Beaver activity again kept the Dry Lake control plugged pretty much throughout the year. Despite this, levels have remained at above the approved level. The critical time would be during spring run-off, and efforts will be made to have the control in operation prior to that time.

Ogemash, Flat Lake and Rice Lake: All constructed during the first two quarters of F. Y. 1967. The Ogemash and Flat Lake controls will enable us to better maintain approved levels in Big and Little Flat Lake.

2. Food and Cover

The wild rice crop on the refuge was one of the better on record -- with a total of 61,159 pounds harvested. Only the record 63,000 pounds harvested in 1963 topped this years production. According to State Rice Commissioner, Paul Krueger, Tamarac had probably the highest quality rice beds in the State, with exception of the Rice Lake Refuge. Much of this can be attributed to the relatively stable water conditions throughout the summer and fall periods, and rather mild weather conditions during the harvest season.

Three lakes (Rice-Mitchell Dam, Little Flat and Big Flat) accounted for approximately 70% of the total rice harvested. Rice Lake, however, produced a below average yield, as it did in 1965. This lake will no doubt become a consistent high producer with the new control structure becoming operational during 1967. This control will also allow for a more consistent production throughout the North and South Chippewa units. At present, excessive releases cannot be made through the Chippewa control due to the size of the bridge at Mitchell Dam, and the subsequent effect it might have on the Rice Lake beds.

Two other controls completed this past year (Ogemash and Flat Lake) will enable us to better maintain approved levels in Big and Little Flat Lakes - two of the better rice producing lakes on the Refuge. Also, the impoundments created by these controls should hold excellent potential for development of new rice beds.

As was the case last year, the Egg Lakes did not produce a harvestable crop of rice due to persistent beaver activity on the Egg River. Water levels remained too high for optimum rice producing conditions. Approximately 800 pounds of rice was aerially seeded on September 15 in Lower Egg in a cooperative effort with the Minnesota Conservation Department. Beaver activity will be watched closely on the Egg River this spring.

Little Rice Lake was seeded with approximately 1500 pounds of rice during 1965, however, beaver activity at the outlet again kept the level somewhat higher than desirable. Some rice was observed in the upper portion of the lake, and it is possible this lake will again become an excellent producer if beaver can be controlled. This lake also has an extremely soft bottom, which may possibly account for the apparent slow growth of the seeded rice. A total of 800 pounds was again seeded this past fall (400 by hand and 400 by aircraft).

Balsam Lake did not produce a harvestable crop of rice this year. The control has been ineffective in so far as being able to sufficiently lower the water level to the point of optimum growing conditions. Floating bog has completely choked the control, but attempts will be made this winter to open this area. About 800 pounds of rice was aerially seeded on September 15, using Minnesota Conservation Department aircraft.

Both Two Island and Carmine produced poor yields, however, rice stands in Carmine were fair, but low water conditions late in the summer made most of the area inaccessible to the harvesters.

The river channel between Blackbird and Rice had an excellent stand of rice, but Blackbird itself had only spotty stands due to the somewhat higher water conditions. The proposed control at Blackbird should alleviate this problem.

Tamarac Lake, once an excellent producer, has yielded practically no rice the past few years due to high water conditions. The dike and outlet control are scheduled for F. Y. 1968, and should create favorable conditions for the establishment of rice beds. Until this is done, there is very little hope that Tamarac will be a rice producer.

Aquatic Vegetation: No information has been taken recently which would enable us to make a quantitative determination of changes in aquatic vegetation as influenced by changing water levels. Most lakes, at least in the more shallow portions, were found to have an extremely dense stand of Ceratophyllum, Myriophyllum, several species of Potamogeton, Eleodea, duck weed and the more common emergents-cattail, round stem bulrush and spikerush. Without vegetative transects, it will be difficult to note changes, except on a casual observation basis.

This year the refuge planted 14 acres of oats, 35 acres of winter wheat, 10 acres of buckwheat, 44 acres of corn and 10 acres of Millet. Some of this grain was harvested for feed and seed but most of it was left unharvested for wildlife use. Both the geese and the ducks made excellent use of some of the fields. In addition, 66 acres of winter wheat and 5 acres of rye was seeded for goose browse, cover and green manure.

All the refuge crops were fertilized; with the good rains and well prepared seed beds, the crops were above average in yields. When it appeared that the waterfowl would not utilize all of the grain 28 acres were harvested.

Permites planted 112 acres of oats, all of which was harvested. All of the permittee farming is south of the Governor's consent Line.

II. WILDLIFE

A. MIGRATORY BIRDS

1. Migration

The first spring migrants observed were mallards near the NW corner of Height of Land Lake on March 17. The following table shows a comparison of observed arrival dates for several species of waterfowl during the spring of 1965 and 1966

TABLE 1. FIRST WATERFOWL OBSERVATIONS* (spring) 1965-1966

<u>SPECIES</u>	<u>DATES OBSERVED</u>	
	1965	1966
Mallard	4/3	3/17
Wood Duck	4/3	3/24
Ringnecked	4/5	4/3
Goldeneye	3/24	3/30
Coot	4/7	4/14
Scaup	4/18	4/10
Canada Geese	4/1	3/18

*Generally, migration was somewhat earlier as compared to 1965, even though spring break up occurred about the latter part of April both years. Some open water was noted at the Tamarac Lake inlet and certain areas along the Egg and Ottertail Rivers as early as the second week in March. Many of the forest potholes had a considerable amount of water by mid March.

A peak concentration of 2500 lesser scaup was reached about the first week in May. Usually, this species has migrated farther north by this date, but this year they were common throughout the refuge until mid May. Redheads were also found much later than normal.

2. Production

Waterfowl production was only slightly greater (7%) than in 1965, but showed a 48% increase over 1964.

The interesting thing about the 1966 breeding population was the increased usage of wooded potholes. Based on our mated pair census, the number of breeding pairs for our four major species increased from (3%-blue winged teal) to (79% ring necked). The Mallard and wood duck breeding population on wooded potholes increased 21% and 36% respectively. Figure 1. Shows Waterfowl Production 1959-1966.

This shift from marsh and lake habitat was no doubt a result of excellent water conditons in the potholes early in the spring, and an abundance of shallow temporary water areas scattered throughout the forested area.

Table 2. Shows 1965 - 1966 production comparisons among the four major species by habitat types.

FIG. 1 WATERFOWL PRODUCTION 1959-1966
TAMARAC NWR

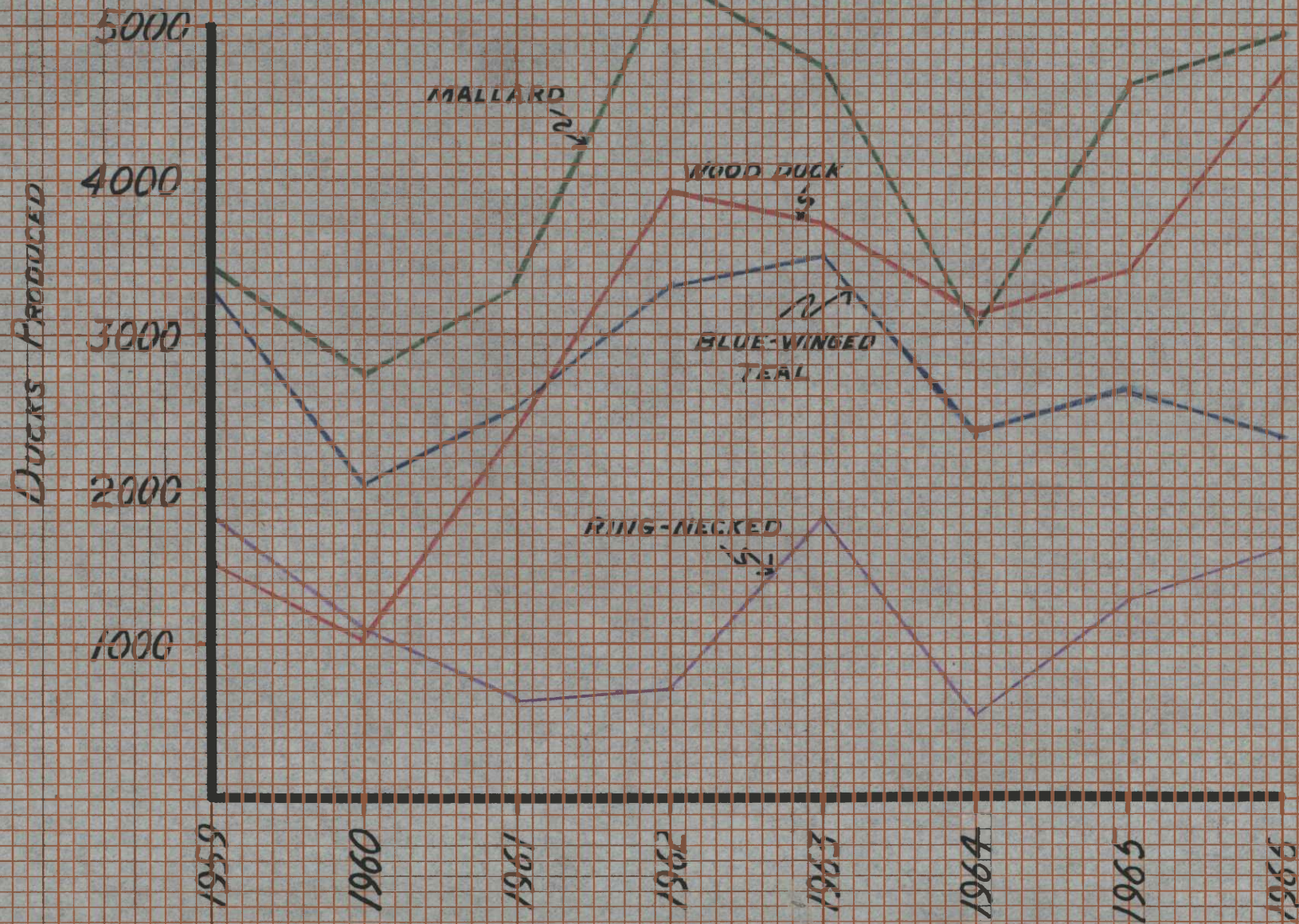


Table 2. Production comparisons $\frac{1966}{1965}$

	Mallard	B-W-Teal	Wood duck	Ringnecked	Total
Potholes (1)	$\frac{3987}{3294}$	$\frac{1992}{1929}$	$\frac{3987}{2922}$	$\frac{1221}{684}$	$\frac{11,187}{8,889}$
Rivers (2)	$\frac{212}{447}$	$\frac{53}{180}$	$\frac{407}{255}$	$\frac{44}{105}$	$\frac{716}{987}$
Level Ditches (3)	$\frac{81}{63}$	$\frac{122}{255}$	$\frac{324}{33}$	$\frac{0}{33}$	$\frac{527}{384}$
Lakes (4)	$\frac{240}{777}$	$\frac{58}{198}$	$\frac{58}{123}$	$\frac{197}{351}$	$\frac{571}{1,449}$
Marshes (5)	$\frac{120}{390}$	$\frac{29}{102}$	$\frac{19}{60}$	$\frac{98}{177}$	$\frac{286}{729}$
TOTAL	$\frac{4640}{4971}$	$\frac{2254}{2664}$	$\frac{4775}{3393}$	$\frac{1560}{1350}$	$\frac{13,287}{12,378}$

1. Based on a 10% sample of forest potholes - 50% nesting success and an average of 6 young reaching flight stage.
 2. Based on a 50% sample of River area
 3. Based on a 50% sample level ditching system
 4. Based on a 50% sample of all lake shoreline
 5. Production computed as $\frac{1}{2}$ that of lakes
- Production factors 2 through 5 same as for No. 1

3. Waterfowl Use

Annual duck and coot use from 1958 to 1966 is shown in Figure 2. Even though the wild rice crop was considerably better in 1966, than in 1965, an early freeze up forced most of the birds from the refuge early in November.

Peak populations on a quarterly basis for six major waterfowl species is shown in Figure 3. Figures for Canada geese include migrants plus free flying resident birds and 1966 production.

4. Canada geese

Our resident flock of giant Canada geese again continued to show signs of establishing itself here at Tamarac.

Tamarac was included in the Regional Canada Goose Restoration Program in 1958, and since that date approximately 200 three year old birds have been released (These being goslings received from Swan Lake, Sand Lake and Carl Strutz game farm).

Fig. 2 Annual Waterfowl Use (Duck & Coot) 1958-1966

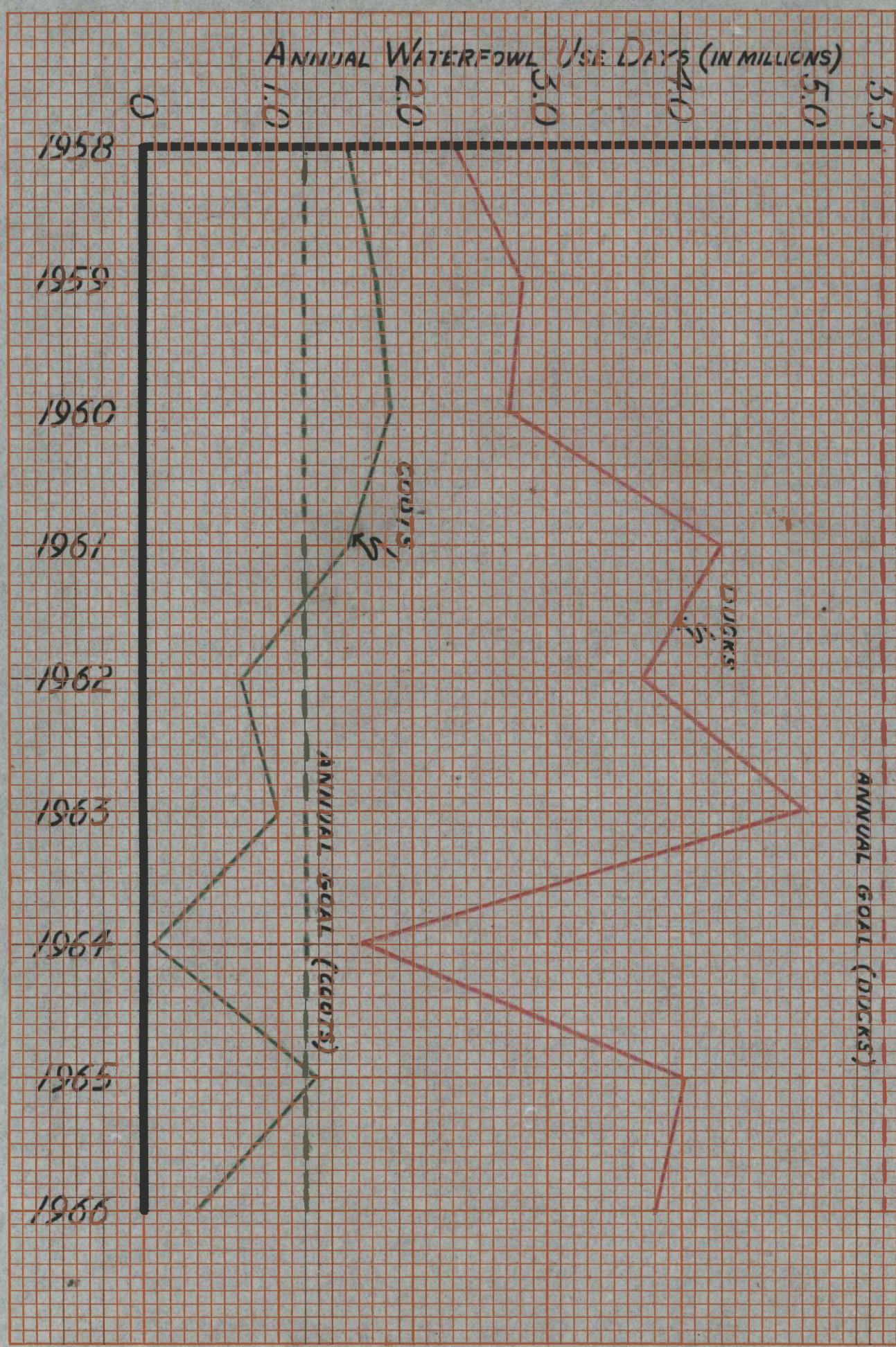
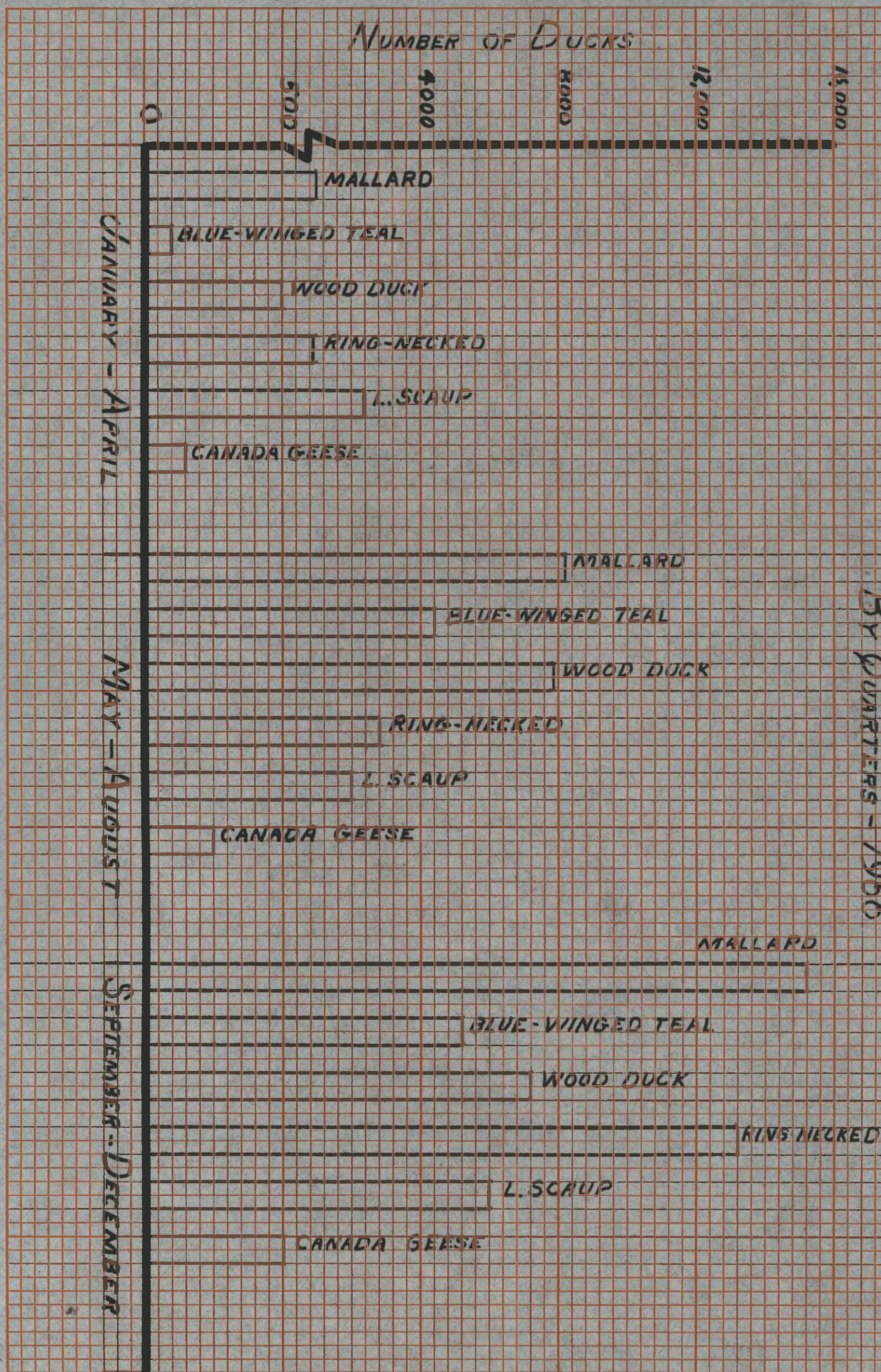


FIG. 3 Peak Waterfowl Populations for Six Major Species
By Quarters - 1966



The response of these birds to establish themselves has been somewhat disappointing, and limiting factors have not been clearly defined or evaluated. We are currently in the process of evaluating our entire goose management program. When this is completed, we should be in a better position to assess current problems.

A total of 51 mated pairs were observed in 1966 compared to 44 for 1965. A total of 13 nests were located in the level ditching system near refuge headquarters. Twenty-four mated pairs were regularly observed on wooded potholes and level ditching systems within one mile of refuge headquarters. Nine nests were located on nesting platforms, and five pair were observed in the Ottertail River and Flat Lake vicinity.

A total of 96 goslings (from 22 broods) were observed during 1966, and projected production was estimated at approximately 150 goslings. Estimated production for 1965 was 70-100 goslings. Production for 1966 surpasses that of any previous year.

As of December 31, our flock consisted of 32 coming three year olds (to be released in the spring of 1967); 19 free flyers; 26 pinioned birds; 38 coming one year olds (1969 release), and 47 coming two year olds (1968 release). This is a grand total of 152 birds on hand.

Several geese died during the winter as a result of pesticidal poisoning from contaminated corn (See Disease Section).

B. UPLAND GAME

Although we conduct no standardized ruffed grouse inventory at present, brood observations during the summer would tend to indicate the overall refuge population is on the upswing. It is believed these birds reached the low in their cycle in 1963 and 1964, and apparently are now on the increase. Snow depth was good with little crusting during the winter.

Several ring-necked pheasants were periodically observed near refuge headquarters and the job corps center during the spring and summer, however, no authenticated brood observations were made. We probably have no more than 10-15 pheasants on the entire refuge.

A sharp-tailed grouse was observed by Job Corps Biologist Lester Koopman during July. This was the only known sighting during the year.

C. BIG GAME ANIMALS

1. White-tailed Deer

From all indications the deer herd came through the winter in good shape. Although snow depth was considerable, there was little or no crusting to impair movement. Concentrations were confined to cutting areas and jack pine stands were dozed trails made movement considerably easier.

We estimated a pre-season herd of 1,340 animals. The projected kill from check station data during the five day season was 241. A total of 80 animals were estimated lost through winter loss, Predation, Poaching and Disease. This would leave us with an approximate 1,050 animals as of December 31.

We appear to be maintaining a favorable ecological balance between the deer herd and their habitat. Favorable sex and age ratios are indicated in our check station data, and the general range condition appears to be holding up well.

2. Moose

Student forester Carroll Zietlow observed a lone moose near the Egg Lake cabin during the latter part of August. This is the first sighting on the refuge in the last two years.

3. Black Bear

Five bear sightings were made during the past year. An excellent crop of wild raspberries resulted in an available food source throughout the entire refuge.

A Job Corps staff member, John Bray, driving his mighty V W, collided with one of our local bruins during the last part of September. John was happily homeward bound one evening (late) when he reached that now infamous spot on Bruce Boulevard where a pair of adults (or was it John?) failed to yield the right-of-way. After missing the lead animal with a bit of fancy maneuvering, the mighty VW collided with the rear-end of the second bear. The VW suffered considerable fender damage and broken headlight. To the best of our knowledge, the bear will again return to the summer berry patches, but will probably be found eating from a standing position.

D. FUR ANIMALS, PREDATORS, RODENTS AND OTHER MAMMALS.

Beaver continue to cause problems in certain areas on the refuge. Dams on the Upper Egg River during late summer caused the water levels in both Carmine and Two Island Lakes to drop to the point where ricing with the use of boats became impossible. Some of our ingenious Chippewa Indians even tried using snowshoes in attempting to reach the better rice stands, however, with only limited success.

The plugging of water control structures and culverts continue to be a problem. Permittee trappers removed a total of 55 beaver - 14 during the fall, and 41 during the spring trapping season.

Mink and muskrat populations continue to remain at a low level. Only 6 mink and 72 rats were taken during the year. The rat price continued to be low, thus, little trapping effort was expended.

Coyotes were observed on several occasions by the student assistant. To our knowledge, none were shot on the refuge. The fox population apparently dropped considerably below the 1965 level. Only 7 were trapped by permittees, and none by refuge personnel. Fox pelts were the highest in years, bringing as high as \$10.00 for prime skins.

There is very little justification, outside of the goose pen area, to expend much predator control effort. The wholesale and indiscriminate killing of predators on the refuge is neither warranted nor desirable.

White and jack pine continue to suffer moderate damage from porcupine. A total of 100 animals were shot by refuge personnel during the year.

Otter tracks were observed along the Ottertail River, and one was trapped at a beaver set by one of our permittees during the spring trapping season.

Snowshoe hares and cottontail rabbits are rarely observed. Populations have remained low the past several years.

The following is a list of animals shot or trapped by refuge personnel or permittees.

Fox	7
Raccoon	51
Skunk	21
Porcupine	100
Wood chuck	19
Crow	22
Gt. Horned Owl	1
Weasel	2

E. HAWKS, EAGLES, OWLS, CROWS, RAVENS AND MAGPIES

The first bald eagles were observed on March 14 near refuge headquarters. These birds were observed daily after that, and the first nest building activity was recorded on March 23 when one of the birds was seen carrying a large branch to an old nest site approximately one mile west of headquarters. There are two nests in this area, and the eagles chose the old nest we thought long abandoned. The other nest was active in 1965. The Two Island nest was again active in 1966. The number of eaglets produced at both sites was unknown. The nest site on the west shore of Egg Lake was not active this year.

Golden eagles were common on the refuge throughout the fall until freeze up. A total of 24 eagles were observed on the North Chippewa unit on October 25. Their presence caused considerable harassment to mallards feeding on wild rice in this area. Several stoops on ducks were observed, however, all attempts were unsuccessful.

Most of the eagles had left the refuge by November 5th. We still had one pair in the vicinity of Flat Lake as of December 31, and these birds were responsible for killing at least three of our Canada geese.

A great gray owl was seen on at least two occasions near the Knauf residence and the north end of Tamarac Lake.

Barred owls were common throughout the winter.

Several red-shouldered hawk observations were made during February and March. Other raptors commonly seen were red-tailed hawk, goshawk, sparrow hawk, sharp-shinned hawk and marsh hawk. A red-shouldered hawk nest was located near the summer students residence during our mated pair census the first week in May.

Great horned owls were seen throughout the year, although their numbers are never very great.

Turkey vultures were seen on several occasions in the Flat and Egg lake vicinity. Although uncommon, these birds have been observed throughout the summer months for the past several years. Nesting attempts on the refuge has not been verified so far as we know.

Crows were abundant throughout the spring, and 200 to 300 fed on winter killed bullheads on Tamarac Lake during April and early May. Crows are year around residents, but most numerous during late spring.

A few magpie were again observed during the fall, however this bird is still considered as rare in this area.

F. OTHER BIRDS

Common year-around residents includes chickadees, nuthatches, red cross-bills, evening grosbeaks, slate colored juncos, downy and hairy woodpeckers, cardinals, and blue jays.

By mid April the following species had been recorded. Great blue herons, common loon, black terns, robins kingbirds, red-wing blackbirds, killdeer, red headed woodpecker, spotted towhee, tree sparrow, grackles, house finch and mourning doves.

Approximately 500 tree and rough winged swallows congregated in the headquarters on the morning of April 17, but had moved on by late evening.

Baltimore orioles and yellow finches were common at the Seemel residence throughout the summer.

About 100 whistling swans were seen sitting on the ice on Tamarac Lake November 3.

G. FISH

Only light to moderate winter kill was noted on our better fishing lakes - Tamarac, Wauboose and Lost. The kill on bullheads in Tamarac (3" to 5" class) was heavy, but only a few northern pike were observed.

Tamarac Lake produced excellent northern fishing during the spring, fall and winter months. Fish in the 6 to 10 lb. class were not at all uncommon. Ice fishing (angling and spearing) was considerably better than in 1965.

Both Wauboose and Lost Lake were a disappointment this year, however fishing pressure in both lakes was extremely light.

Several thousand black bass were stocked in these lakes in 1963 and 1964. A few crappie were reported taken in Wauboose the latter part of the summer.

The Minnesota Conservation Department stocked 80 brood fish in Pine Lake during the summer. They hope to use this lake as a rearing area from which to stock surrounding lakes. The lake is extremely productive, but is vulnerable to winter kill.

Development plans call for eventually lowering the water levels in Pine Lake. This was at one time an excellent waterfowl lake with dense stands of wild rice.

The new control structure at Mitchell Dam on Rice Lake (completed in 1966) will have an attached fishing walkway. This is one of the more popular "Fishing Holes" on the refuge, and we anticipate considerable more public use at this site.

We continue to receive excellent cooperation from the State Fisheries Division in assessing our fisheries problems.

H. REPTILES

The snapping turtle population is apparantly low throughout the refuge. Our one expert "Snapper Trapper" failed to catch a single turtle during 1966.

I. DISEASE

A total of 17 geese were found dead in the pens during 1966. Avian predators were responsible for five known deaths, five were of unknown causes and the remaining seven were found to have sufficient levels of chlorinated hydrocarbon residues to have caused death. See Table 3. All tests were conducted by the North Dakota State University Veterinary Science Department.

TABLE 3. Record of 1966 Goose Mortality, for Specimens in which Pesticidal Poisoning was found.

Date found Dead	Age	Sex	Cause of Death	Remarks
1/31/66	1	Unk	Pesticidal Poisoning	
2/2/66	3	Unk	" " " "	Positive test for CH-Hyd.*
2/5/66	6	M	" " " "	
2/9/66	2	Unk	" " " "	
2/9/66	3	F	" " " "	
2/17/66	2	Unk	" " " "	350 ppm (liver perforated)
2/28/66	2	Unk	Unknown	Sent to Denver Research laboratory**

* High level indicated, but no quantitative analysis given.

** Results pending.

The other five deaths for which causes were unknown were probably a result of Pesticidal poisoning although specific tests for such were not conducted.

Post mortem examinations of the livers revealed discoloration and apparent deterioration. This condition is often indicative of Pesticidal poisoning from chlorinated hydrocarbon compounds.

Immediately following the diagnosis of the presence of organic pesticide residues, a sample of all foods (Corn, Oats, Barley and Lettuce leaves) were submitted to the University of North Dakota for residue analysis. Random samples of each food type were tested using the Gas Chromatographic method. Tests were negative for all except Corn, and five random samplings indicated a range from 95 to 210 ppm. The average was 137 ppm for all samples.

The search began for the source of contamination. The corn had been obtained from Union Slough Refuge in December of 1965, and a call was made to Manager Ferguson to determine whether or not the corn had been sprayed or in any way treated with chemicals. He assured us it had not, and thus the mystery deepened. We did find out, however, that the corn had been bagged with sacks obtained from a local elevator. These sacks previously contained Soybeans, which may have been treated with some pesticidal chemical.

It hardly seems reasonable to assume the corn could receive sufficient contamination levels from residues left in the bags. Bag samples, along with additional corn samples were sent to the Denver Research laboratory, and results are still pending at this time.

Just what effects this will have on production remains to be seen, however, production reached an all time high in 1966. Of the seven deaths caused by poisoning, four were sub-adults, two were coming three year olds (Spring 1966) and one was a six year old pinioned bird.

Eggs will be collected from any abandoned nests in 1967, and tested for chlorinated hydrocarbon residues.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. PHYSICAL DEVELOPMENTS

In addition to the routine maintenance on buildings, roads, trails, signs, picnic areas, and equipment, the following are some of the major jobs:

1. Under contract three water control structures, namely the Ogemash, Flat Lake and Rice Lake (Mitchell Dam) were completed except for some finishing on the earth fills after the Spring thaw in 1967.
2. Two stall garage constructed by JCCC at the Assistant Manager's residence (#119).
3. Building #95 garage moved to residence #97 to provide storage for Government vehicle.
4. Residence #119 was renovated by refuge personnel with some assistance from the JCCC both in labor and materials. New heating system, insulation and new roofing made the place liveable even though small.
5. Living quarters #111 was renovated by the Job Corps; the work consisted of refinishing the interior, new bathroom added on, new oil heating system, and improved both water and sewer system. The project is not completed yet due to weather conditions. The exterior of the log cabin needs, chinking, staining and new storm windows.
6. In quarters #13 (Manager's residence) a new heating plant was installed to replace the oil furnace put in a year ago which was too small and poorly installed. The new plant now provides adequate heat.
7. Electrical systems were checked and the following changes were made: In quarters #13 and #4 the 60 amp units were replaced with a 100 amp units to meet code standards. Quarters #119 and # 111 were rewired too with the help of labor and funds from Job Corps. The headquarters yard light was replaced with a new mercury vapor automatic light.
8. Two year-around roads were built for access to living quarters #111 and #119. Graveling was completed on the road into quarters #119 before winter set in. These were Job Corps projects but refuge personnel assisted with personnel and some equipment.

9. Since most of the surplus buildings acquired from the land acquisition program were either sold and removed or destroyed by burning, much clean-up work had to be done. Old basements, foundations, and fences had to be bulldozed in, not only for safety reasons but to improve appearance of the area. A special Job Corps work project has also been established which will take care of additional cleaning up in 1967.

10. A 100 watt Motorola "Compa" radio base station was purchased and installed in a temporary building near the refuge tower. Two - 15 watt Motorola "Business Dispatcher" units were also purchased for vehicles. Remote Control Consoles are set up in the office and Manager's residence. The Tamarac Job Corps Center has also purchased radios and will be on the Service frequency, the same as the refuge.

11. Clearing of the Governor's Consent Line was started last May by the Tamarac Job Corps and by the first of the year about 15 acres had been cleared - $2\frac{1}{2}$ chains wide and approximately three-fourths of a mile.

12. Trail brushing was started by the Job Corps., especially on trails used by hunters.

13. Approximately two miles of level ditching was done by our dragline operator. Work continued up into the first of December. In addition about 350 potholes were blasted by the Tamarac Job Corps blasting crew. Loafing platforms were also constructed and placed in many of the potholes.

14. Numerous other work projects of lesser importance consisted of taking care of the rice harvest, refuge farming program, land preparation for tree planting in 1967, and removal of beaver dams.

B. PLANTINGS

1. Aquatics and Marsh Plants. Wild rice was seeded on several areas by the State Game Department plane as follows: Little Rice Lake 400 pounds, Balsam Lake 800 pounds, and Lower Egg Lake 800 pounds. Refuge personnel seeded by hand 391 pounds on Little Rice Lake. The wild rice seed was part of the refuge share of the rice harvested. The Aerial seeding was made possible through the cooperation with the Minnesota Conservation Department.

2. Trees and Shrubs There were no trees or shrubs planted during the year. Ground was prepared for replanting approximately 70 acres in 1967. Weather conditions during the year were very favorable for plantings made in previous years.

3. Upland Herbaceous Plants - None.

4. Cultivated Crops

Co-operative farming agreements were made with seven local farmers. A total of 112 acres were seeded to oats which yielded 4,676 bushels. Refuge operations included oats, winter wheat, buckwheat, corn and millet for a total of 129 acres. Of this amount 800 bushels of grain was harvested for local use mainly. Some of the millet harvested will be used in other areas for mourning dove banding bait. An additional 120 acres were seeded to winter wheat, rye, alfalfa and white clover. All crop yields were above average because of the good weather, fertilizer and good farming practices.

C. Collections and Receipts

Refuge share of wild rice was 4,281 pounds of the 61,159 pounds harvested. The 1965 crop was 1,578 pounds; however, no share was obtained from the rice harvested on Rice Lake. This year the refuge permitted ricing Rice Lake only if the refuge could get their 7% and could have control of the number of boats. No problems were encountered after everybody understood that the Refuge was going to manage Rice Lake the same as any of the other rice beds within the refuge. Rice Lake was not within the refuge boundaries until in 1965.

All rice harvesting was done by the local Chippewa Indians. The first day's price for green rice was \$1.00 to \$1.20. Most of the rice sold for \$1.40 but some did reach \$1.65 per pound.

The following shows the harvest by lakes:

Rice Lake (Mitchell Dam)	13,921
Little Flat	10,131
Big Flat (Cabin point)	17,741
South and North Chippewa, Stump, Booth, Blackbird, balance of Big Flat, Two Island, Egg and Carmine	3,942

In cooperation with the Minnesota Conservation Department, 2,000 pounds was seeded by air by the Department in return for 1380 pounds of rice for seeding in lakes in this general area.

From refuge permittees, 1,169 bushels of oats was received; an additional 1269 bushels of oats was received from wetland tracts as Government share. The Tamarac JCCC harvested 300 bushels of ear corn by hand picking. One load of contaminated shell corn was received from Union Slough Refuge and had to be destroyed after losing several geese. Another 200 bushels of corn received from Tewaukon was destroyed after finding the corn too mouldy. The refuge harvested 300 bushels of millet for mourning dove banding and 200 bushels of wheat for seed for browse seeding. A hundred bushels of barley was picked up on wetlands. From Nebraska wetlands 230 bushels of Milo was delivered by the Valentine Refuge.

D. Control of Vegetation

Twenty-five acres of Hoary Alyssum was sprayed in some go-back land with M. C. P. A. (48%) at the rate of 2 pounds per acre. Immediate results were excellent.

Picnic areas and refuge trails were mowed to control brush and weeds during the summer and fall.

E. Planned Burning

Brush and stump piles in the Flat Lake fields and on the Governor's Consent Line were burned during the fall and winter.

F. Fires

One small fire was started by the prima-cord used in blasting potholes. This project is being carried out by the JCCC. Approximately 5 acres of marsh and grassland was burnt off.

We continue to work with the Minnesota Forest Service. Plans are now underway to work out radio communications with the Department and eliminate all our obsolete refuge telephones which never worked most of the time.

On several occasions, smokes were checked out near or on the refuge that had been observed by the personnel in the fire tower.

IV. RESOURCE MANAGEMENT

A. Grazing

No grazing permitted on the refuge.

B. Haying

Twelve permittees harvested 389 ton of tame hay which was mostly alfalfa and 1481 tons of wild hay. Haying was carried on after all nesting was completed. Removal of the dense mat cuts down on the fire hazard and improves the feeding areas for the goose flock besides making available improved nesting habitat for the following year.

C. Fur Harvest

For the year ending April 30th, 1966, 87 beaver were harvested but only 12 muskrats. In addition, 24 skunks, 62 raccoon and 85 porcupine were removed as predators mainly by refuge personnel.

During the fall of '66 14 beaver were removed by special permission from the Conservation Department. These beaver were continously plugging up water control structures.

Fur prices continue to be very poor resulting in very few interested trappers to trap on a share bases.

D. Timber Removal

Over thirty five thousand board feet of saw timer and over thirteen hundred cords of pulp wood and other products were removed.

The volume by species is as follows:

<u>Species</u>	<u>Cords</u>	<u>MBF</u>
Jack pine	557.51	13.50
Balsam	200.18	14.72
Aspen	319.60	2.00
Tamarack	128.68	.60
Spruce	71.07	
Mxd Hardwoods	45.00	
Birch	2.00	
White pine		3.00
Ash		.70
Elm		.80
	<u>1,324.04</u>	<u>35.32</u>

Four permittees, employing two to five men each, did most of the cutting. There were also 20-30 men sent out by the Becker County Welfare Board. These men cut posts in Jack pine thinning operations.

E. Commerical Fishing

None.

F. Other Uses

None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Reports

Timber Inventory. Over 7,000 acres of the refuge were inventoried during the past year. Most of the field work was done by Carroll Zietlow a summer student in forestry.

The work consisted of type mapping from aerial photographs; field checking each timer type to determine site, age, base of area and habitat conditions, and prescribing management needs,

field checking all other types and features such as marshes and potholes to determine condition and development needs; and transferring this information to needle sort cards for easy reviewal.

Wildlife Inventories

Compiling of data for the Wildlife Inventory Report was started with the help of Wildlife Biologist, Dr. Wm. Green, Merrill Hammond and Herbert Dill. The preliminary report will be completed in February of 1967. Efforts are being made to standardize the various techniques of inventoring wildlife on the Tamarac Refuge.

VI. PUBLIC RELATIONS

A. Recreational Use

Total recreational use dropped from 12,970 visitor-days in 1965 to 7,825 in 1966. The big decrease was due to this being an "off-year" for Boys Scout Jamboree. The encampments are held every other year at Tamarac.

With improved recreational facilities scheduled for 1967, it is anticipated that the visitor-days use will increase. Not included in the 1966 figures are the visitor-days use as a result of the Tamarac Job Corps Center. Many local people as well as friends and relatives of the Job Corps staff and the Corpsmen visit the Center and some of the refuge points of interest.

Besides the normal run of Boy Scouts, 4-H, Sunday School, etc, we had a group of 60 - 5th grade students during the fall.

During the summer visitors to refuge headquarters were observed nearly daily, the heaviest on week-ends. The refuge tower at headquarters is used frequently in order to look out over Flat Lake and the Flat Lake fields, to observe waterfowl. The captive goose flock at refuge headquarters is also quite an attraction. During the nesting season some attempt is made to control the visitors to the pens to avoid disturbance.

B. Refuge Visitors

<u>Date</u>	<u>Name</u>	<u>Organization</u>	<u>Purpose</u>
2/4/66	L. Krefting	Univ. of Minn	Research
2/14/66	M. Turner	R.O.	Land Exchange
2/15/66	E. Anderson	Voc.Tech Sch.	Surplus property
2/17/66	M. Patterson	Hubbel Pond	Return Equipment
2/21/66	J. Savata	State Fisheries	Property
2/24/66	N. Blixt	State Warden	Enforcement
2/24/66	Geberian	" " " "	" "
2/28/66	D. Schmidt	Becker Co.	Stumpage
3/1/66	M. Patterson	Hubbel Pond	Salary Comparison
3/1/66	G. Neilson	State Forestry	" " "

Date	Name	Organization	Purpose
3/2/66	S. Romel	State of Minn.	Land Exchange
3/9/66	S. Romel	State of Minn.	" " "
3/10/66	Wm. Aultfather	R.O.	Forestry
3/16/66	H. Dill	R. O.	Wood duck study
3/16/66	Wm. Green	Upper Mississippi	" " "
3/16/66	M. Hammond	Refuge Biologist	" " "
3/17/66	Wm. Ellerbrock	GMA	Enforcement
3/18/66	T. Carlstrom	Indian Bureau	Stumpage prices
3/21/66	R.S. Kvamme	Contractor	Steel Bridges
3/24/66	G. Gard	AAO Fergus Falls	Wetlands Mgmt.
3/25/66	R.S. Kvamme	Contractor	Steel Bridges
3/29/66	M. Baldwin	Pulp buyer-Frazee	Timber
3/31/66	M. Swedberg	Operator-General	Timber
4/12/66	F. Martin	R. O.	J. C. Project Proposals
4/18/66	G. Sherwood	Jamestown Research	Wood duck study
4/18/66	L. Cowardin	" " " " " "	" " " "
4/21/66	D. Swendsen	GMA	Enforcement
4/22/66	J. Bowman	River Basins	J. C. Bee Project
4/25/66	L. Krefting	Univ of Minn.	Research
5/2/66	H. Crandell	R. O.	Planning
5/2/66	E. Crozier	R. O.	Planning
5/5/66	G. Gigstead	Mink Rancher	Pick up dead deer
5/9/66	L. Krefting	Univ of Minn.	Research
5/10/66	D. Swendsen	GMA	Enforcement
5/14/66	Wm. Green	Upper Mississippi	Wood duck Study
5/14/66	F. Martin	R. O.	See refuge operations
5/20/66	D. Miller	R. O.	" " " "
5/29/66	S. Christensen	U.S. Forest Ser.	Check Clerk Position
5/31/66	W. Haugen	Iowa State Univ.	Wood duck Study
5/31/66	Wm. Green	Upper Mississippi	" " "
5/31/66	H. Dill	R. O.	" " "
6/5/66	Boy Scouts	Manypoint Council	Camporee
	227 boys, 37 leaders and 12 visitors.		
6/7/66	M. Turner	R. O.	Land Exchange
6/8/66	R. Fihn	AAO Fergus Falls	Wetlands
6/9/66	J. Bowman	River Basins	Forestry
6/22/66	Girl Scouts	Iron Range	Tour
6/27/66	N. Nelson	Valentine Refuge	On detail
6/29/66	Umberger	R. O.	Courtesy visit
6/29/66	F. Martin	R. O.	" " "
6/29/66	Hewlett	Central Office	" " "
7/5/66	Boy Scouts	Manypoint	Tour
7/5/66	L. Krefting	Univ of Minn	Research
7/7/66	I. G. Anderson	Contractors	Pre construction conf.
7/7/66	H. Berry	" "	" " "
7/7/66	R. Helmke	" "	" " "
7/7/66	A. Hageman	" "	" " "
7/7/66	J. Ricky	R. O.	" " "
7/11/66	Wm. Green	Upper Mississippi	Wood Duck Study
7/14/66	L. Krefting	Univ of Minn.	Research
7/14/66	Hansen	" "	" "
7/14/66	Finley	" "	" "
7/15/66	T. Abrahamson	State Warden	Permit to control Water

Date	Name	Organization	Purpose
7/18/66	J. Larsen	Becker Co. Sheriff	Indian Bones
7/18/66	O. Zeck	Historical Society	" "
7/19/66	L. Mohan	Bureau of Mines	First Aid Tng.
7/19/66	D. Swendsen	GMA	Enforcement
7/19/66	T. Abrahamson	State Warden	" "
7/23/66	H. Dill	R. O.	Wood duck Study
7/23/66	McGilvery	" "	" " "
8/3/66	F. Martin	R. O.	See Refuge operations
8/9/66	Wm. Aultfather	R. O.	Forestry
8/11/66	M. Hammond	Refuge Biologist	Night lighting ducks
8/12/66	Johnston	R. O.	Engineering
8/17/66	N. Zauche	Minn. Forest Ser.	Land Status
8/18/66	A. Wagner	R. O.	Construction
8/22/66	Wm. Ellerbrock	GMA	2 Captive Geese
8/26/66	P. Krueger	Minn. Rice Commissioner	Rice Harvest
8/26/66	D. M. Coe	Minn. Dept. Agric.	Rice Grading
8/27/66	R. Burwell	R. O.	Visit
8/30/66	Wm. Green	Upper Mississippi	Wood duck Study
8/31/66	D. Sanders	Hill Foundation	Wetland Photos
8/31/66	N. Blixt	State Warden	Rice Harvest
9/7/66	A. Hoger	Minn. Dept. Agric.	Grading Wild Rice
9/13/66	P. Hagquist	R. O.	Survey work
9/13/66	R. Kist	R. O.	" "
9/13/66	L. Desmio	R. O.	" "
9/20/66	Wm. Daugherty	No Dak. Fisheries	Visit
9/20/66	J. Nelson	" " "	" "
9/21/66	R. Fihn	AAO Fergus Falls	Wetlands
9/21/66	W. Hogleid	R. O.	" "
9/21/66	D. Beck	Valentine Refuge	Load of Milo
9/21/66	B. Laugen	R. O.	Official Visit
9/21/66	R. Podolak	Washington Office	" "
9/21/66	A. Meyer	R. O.	" "
10/6/66	T. Pittman	Bur. of Land Mgmt.	Visit
10/6/66	A. Evans	" " "	" "
10/6/66	J. Bowers	" " "	" "
10/25/66	L. Amondson	Bur. Indian Affairs	Inspect Islands
10/25/66	T. Codstren	" " "	" " "
11/7/66	E. Crozier	R. O.	Safety
11/7/66	J. Jones	Wash. D. C.	Safety
11/25/66	C. Schaffe	R. O.	Job Corps
11/25/66	H. Woon	R. O.	Job Corps
11/29/66	Wm. Hanson	Forestry	Visit
11/29/66	E. Olmstead	" "	" "
12/10/66	C. Weir	Civil Defense	Check Instruments
12/9/66	C. Schuler	Tewaukon Refuge	Deliver corn
12/14/66	Wm Aultfather	R. O.	Forestry

C. Refuge Participation

<u>Date</u>	<u>Organization</u>	<u>Attended or Presented by</u>
1/23-28/66	Regional Conference	Hunt, Seemel
3/10/66	Becker Co. Sportsmen Club	Hunt, Seemel
3/14/66	Wildlife Week. Contacted business men in town	Seemel, Schmidt
3/31/66	Becker Co. Commissioners Meeting re: Land Exchange	Seemel
4/27/66	Meeting Mitchell Dam Bridge - Carl Nelson	Seemel
5/4/66	Becker Co. Commissioners Meeting re: Land Exchange	Hunt, Brashears, Seemel
5/12/66	Becker Co. Sportsmen Club	Frates, Seemel
5/13/66	Rice Meeting with Indians at Ponsford, Minnesota (35)	Hunt, Seemel, Frates
5/24/66	Meeting with U. S. Forest Service, on "Entrance Fees and Use Permits at Hayword, Wisc. (5)	Frates
6/29/66	Becker Co. Commissioners and Job Corps Personnel (22)	Hunt, Brashears, Nelson, Seemel, Frates
8/23/66	Wild Rice harvest meeting with Indians at Ponsford, Minnesota	Nelson, Seemel, Frates, Christensen
8/26/66	Wild Rice meeting with Rice Commissioner at refuge headquarters	Nelson, Seemel, Frates
8/27/66	Job Corps Center - Conference with Dr. Johnson, Howard Woon and members of press (25)	Seemel, Nelson
9/8/66	Becker Co. Sportsmen Club	Nelson, Seemel, Christensen
9/23/66	CCC - Seminar, "Improving Communications with the Public". (125)	Nelson
9/28/66	Meeting on Law Enforcement (30)	Nelson, Seemel, Christensen

D. HUNTING

1. Waterfowl

Typical "Bluebird" weather prevailed throughout the area during opening weekend - October 8 and 9. Ducks were widely dispersed throughout the area, with mallards and ring-necks the most dominant species.

Approximately 400 hunters participated in the opening weekend Foray. A total of 176 hunters bagged 468 ducks for an average of 2.7 birds per hunter. Approximately 80% of the kill was composed of mallard and ringneck.

Hunting pressure dropped off considerably after opening weekend as the weather continued nice, and many of the ducks moved into the sanctuary portion.

Hunters anxiously awaited the "Bluebill" flight which never really materialized this year. Normally, the migration comes somewhat later in the season, however, most of these birds had passed through the area by opening weekend. No appreciable build up was noted after the second week in October.

As in the past, Tamarac, Blackbird and Rice Lake received the bulk of the hunting pressure.

2. Deer

The 1966 deer season opened November 12 - one day earlier than last year. A total of 1690 hunters participated in the five day season - an increase of 127 hunters from 1965. A total of 246 deer were taken on the refuge, or a success rate of approximately 15% - down from the 20% recorded in 1965.

The drop in hunting success is probably more a reflection of weather conditions than a lower deer population. Although snow conditions were optimum during the first two days of the season, cold temperatures (-9 on 11/12 and -5 on 11/15) and little or no wind made hunting extremely difficult. Hunters reported seeing considerable deer sign, but observed few animals.

TABLE 4. SUMMARY OF 1966 DEER SEASON

Date	# Cars on Refuge	No. Hunters	No. Hunters Checked	Deer Checked	% Success	Projected Kill
11/12/66	180	540	291	37	.13	70
11/13/66	279	725	336	58	.17	116
11/14/66	80	200	No check station data		.15	30
11/15/66	40	100	from 11/14 to 11/16		.15	30
11/16/66	50	125	Figures are Estimates		.15	15
	629	1690				261

TABLE 5. SEX AND AGE COMPOSITION OF 1966 DEER KILL

	<u>Adult</u>		<u>Fawn</u>		
	<u>Buck</u>	<u>Doe</u>	<u>Buck</u>	<u>Doe</u>	<u>Total</u>
11/12/66	13	11	7	6	37
11/13/66	21	19	6	12	58
11/14/66					
11/15/66	Sample too small during last 3 days.				
11/16/66					

This gives a Fawn/Doe ratio of .775. The Fawn kill was 48 percent. In the past the Fawn kill has been running slightly over 30 percent.

E. VIOLATIONS

Local state wardens gave the refuge personnel considerable assistance on the refuge as well as vis versa in the area surrounding the refuge. Refuge personnel assisted USGMA Swendsen on several occasions on waterfowl patrol. The refuge WAE's contribute information frequently both during route refuge duties and off duty time.

Violations processed as follows:

<u>Violator</u>	<u>Violation</u>	<u>Disposition</u>	<u>Warden</u>
Eugene B. Goble Ogema, Minnesota	Transporting a loaded Rifle in motor vehicle	State court \$50.00 + \$5.00	Christensen
David R. Collins 421 Bowling Detroit Lakes, Minn.	Transporting a loaded Rifle in motor vehicle	State court \$50.00 + \$4.00	Seemel Stone
John J. Moore 600 York Street St. Paul, Minn.	Taking of ducks from motor boat in open water	State court \$100.00 + \$4.00	Swendsen Nelson Christensen
	Transporting a loaded shotgun in motor boat	State court \$25.00 + \$4.00	Swendsen Nelson Christensen
Donald J. Field 661 Palace Street St. Paul, Minn.	Taking of ducks from motor boat in open water	State court \$100.00 + \$4.00	Swendsen Nelson Christensen
	Transporting a loaded shotgun in motor boat	State court \$25.00 + \$4.00	Swendsen Nelson Christensen
Russell M. Warren 323 No. 4th Street Wahpeton, North Dakota	Transporting a uncased shotgun in motor vehicle	State court \$25.00 + \$4.00	Christensen Christensen
John J. Cossette 2317 10th Ave. So. St. Cloud, Minn	Taking of ducks in open water	State court \$25.00 + \$4.00	Nelson Christensen
James A. Spoden 317 38th Ave. N. St. Cloud, Minn.	Taking of ducks in open water	State court \$50.00 + \$4.00	Nelson Christensen
	Transporting a loaded uncased shotgun in motor boat	State court \$50.00 + \$4.00	Nelson Christensen

F. SAFETY

Safety meeting's were held monthly but in addition safety was brought out almost daily on all jobs. First Aid Kits were improved with the professional help of Refuge clerk Christensen. He has spent six years as a volunteer member of a rescue squad with the sheriff's department near Duluth.

All of the refuge personnel except the refuge manager attended a one day First Aid Safety Workshop put on by the Bureau of Mines, at refuge headquarters.

There were no lost time accidents this past year.

VII. ITEMS OF INTEREST

Becker county received \$10,426.70 in lieu of taxes this year as compared to \$400 - \$500 from gross receipts in past years.

Robley W. Hunt retired on July 6, 1966. They have a home on the Baptism River a mile south of Finland, Minnesota, just off state highway #1.

The Job Corps had the refuge flown by Mark Hurd on October 5th. The resulting fall pan photos are very good.

Job corpsmen under the supervision of Lester Koopmen blasted 400 potholes with A/N.

Job corpsmen under the supervision of John Hutchinson cleared about $3/4$ mile of brush and trees on a $2\frac{1}{2}$ chain wide strip along the Governor's Consent Line. Mechanical equipment will be used to keep the brush down so that the area will revert to grass. This line is used to delineate the public use area from the sanctuary; serve as a fire break; and provide more grass habitat and edge.

On July 20th, Valentine Refuge Manager Nelius B. Nelson and his wife Alma transferred to the Tamarac Refuge. From the Sandhills to the Woods and swamps was quite a change.

January 31, James E. Frates reported to work to fill the Assistant Refuge Manager vacancy. Jim and his wife, Marlene, are natives of Nebraska. They have two children Bradley 4 years old and Bobby $1\frac{1}{2}$ years old. Jim transferred in from the South Dakota Conservation Department where he had been an area Wildlife Biologist at Huron, South Dakota.

June 19th Stanley E. Christensen reported to duty as a refuge clerk to replace Wayne Schmidt. Schmidt transferred to the Job Corps in February. Mr. Christensen's wife Janice and their 5 year old daughter, Lynn are enjoying their new location. The Christensen's family is from Duluth.

As of December 31, 1966, Mr. John Penchoff continued to make use of his "life-use" privilege occupying his former residence on the refuge; An elderly widow, Mrs. Krabbenhoft also continues to live in here farm residence.

Tamarac Job Corps Center

The first corpsmen reported in on March 9th. At that time much work was yet to be completed at the Center in order to operate the 200 youth camp. Staff consisted of about 52 members most of the year. Work projects started for the refuge were as follows: Blasting potholes, cleaning up old building sites, tree clearing on the Governor's Consent Line, construction roads, gravelling, construction of a new 2-stall garage at quarters #119, renovation of quarters #111, improvements in heating and wiring systems at quarters #119, trimming trees on many public use trails, besides numerous miscellaneous jobs to assist refuge personnel.

The Center was shaping up pretty good by the end of the year. Most of the buildings were completed except for some interior work; outside work also was nearing completion such as landscaping, roads, streets, staff housing, etc.

Numerous other work projects were in order such as the construction of wood duck boxes, mallard nesting baskets, martin houses, etc. These were items for other refuges and the Northern Prairie Wildlife Research Center.

The Tamarac Job Corps Director is to be complimented along with his staff for the fine cooperation given the refuge and for the well handled camp with a minimum of public problems.

Summer Student Activities

Robert Nagel, Graduate Student from Iowa State University, entered on duty April 4th, to begin on his wood duck research study. Bob is a candidate for Master's Degree working through the Iowa Cooperative Wildlife Research Unit.

Objectives of the study are two fold:

(1) Examine predator - nest contacts in natural and semi-natural cavities as compared to dummy nests on the ground, and (2) to determine the distribution, frequency and acceptability of natural cavities on the refuge.

Aside from the above project, Mr. Nagel also participated in routine refuge assignments, and conducted several tours for boy scout groups from the Many Point Scout Camp.

The first attempts of banding waterfowl by night lighting at Tamarac was conducted during August. Although the number of ducks caught (38 in 10 hours) was low, it appears this might be a practical and feasible method of capturing ducks --once the technique is perfected and experience is gained by a two member team.

Mr. Nagel banded a total of 837 ducks during August and early September. Table 6 is a summary of all banding activity during 1966.

TABLE 6. WATERFOWL BANDING SUMMARY ON THE TAMARAC NATIONAL WILDLIFE REFUGE DURING 1966

Species	Local		Immature		Adult		Total
	Male	Female	Male	Female	Male	Female	
Wood duck	18	13	18	39	194	29	311
Mallard	22	20	179	176	3	15	415
Black duck			1		1		2
Widgeon				2		1	3
Ringneck	9	8	1	1			19
B-W-Teal			22	15	35	4	76
G-W-Teal			2	3	3	3	11
Total	49	41	223	236	236	52	837

The wildlife section, NR's and the item on hunting was written by Assistant Refuge Manager James E. Frates. Forester Seemel prepared the section on timber management, most of Part V and parts of part VII; Refuge Clerk Christensen edited and typed up the report besides compiling visitor data, etc. Refuge Manager Nelson wrote up the balance of the report. Photos attached were taken by refuge personnel as indicated under each photo.

SIGNATURE PAGE

Submitted by:

Nelius B. Nelson
(Signature)

Date: March 17, 1967

Nelius B. Nelson
Refuge Manager
Title

Approved, Regional Office:

Date: 3/22/67

Donald A. Carpenter
(Signature)

Regional Refuge Supervisor



Tamarac Refuge headquarters looking N by NW. Level ditching work shown in the three adjoining marshes. Development in accordance with Master Plan calls for several new buildings, and the replacement of three others. Captive goose pens in lower right. Flat Lake in upper right. CR1-27 NBN



Tamarac Refuge headquarters area showing crop land--tracts of corn, buckwheat, millet and wheat (primarily for goose forage). Level ditching near center of photo; Flat Lake lower right and Tamarac Lake upper right--looking S by SW. CR1-9 NBN



Tamarac Job Corps Conservation Center with the upper portion of Rice Lake in background. Several buildings have been added since picture was taken on 8/11/66; including trailer houses for staff members. Gym is in lower right. The 200 youth center became operational on 3/8/66 when first Corpsmen arrived. CR1-18-NBN



Tamarac Refuge personnel in December, 1966. From left to right: Refuge Clerk, Stan Christensen; Wildlife Technician Jim Stillings; Maint. Man Charley Stone; Forester, Robert Seemel; Foreman II, Dave Annette; Maint. Man Tom Jones; Refuge Manager Nelius Nelson; Ass't. Refuge Manager, Jim Frates. R1-5-NBN



A portion of the Ottertail River which flows through the refuge from north to south. This shot looking east up river towards Ice Cracking Lake on the east boundary. This area receives considerable use by mallards and wood ducks during the fall. The many shallow extensions and oxbows provides excellent breeding habitat. CR1-13 NBN



Wild Rice harvesting--Rice Lake Unit. Mrs Francis Rock with load of rice harvested in four hours with the help of her son who acted as "poler". She had 180 lbs. @ \$1.50/lb.= \$270.00 Refuge takes 7% for reseeding purposes. Harvesting of rice on the refuge is done by local Chippewa Indians. CR2-6 NBN



Robley and Elly Hunt enjoying the refuge noon luncheon in their behalf. Now retired at Finland, Minnesota on the North Shore of Lake Superior. R5-139 RKS



Pre-luncheon "bull session" by a few of the refuge personnel. Robley doing a bit of reminiscing about the "good old days" with the Bureau. R5-137 RKS



Level ditching work on Marsh Lake along West Indian Service Road showing excellent water conditions as they existed in the Spring of 1966. R2-7 JEF



A typical forest pothole. About one-half of our annual production occurs from this type of habitat. We estimate there^{are} about 3,000 of these potholes scattered throughout the refuge. R2-9 JEF



Ma, Pa and the kids out for an afternoon stroll. R2-8 JEF



Family of B. c. maxima using the level ditching system near refuge headquarters. Most of the geese at Tamarac nest on the spoils of level ditches. R2-10 JEF



Applying 5-20-20 fertilizer to winter wheat ground at Chippewa Field. R1-15 JEF



Stand of red proso millet at Chippewa Field. R1-13 JEF



Dense stand of white clover adjoining wheat field at Melander's Field R1-16 JEF



Cutting white clover for migrant geese at Melander's Field. R2-18 JEF



Winrowed millet at Melander's Field. R1-18 JEF



Millet yielded 30 bu./acre. R1-19 JEF



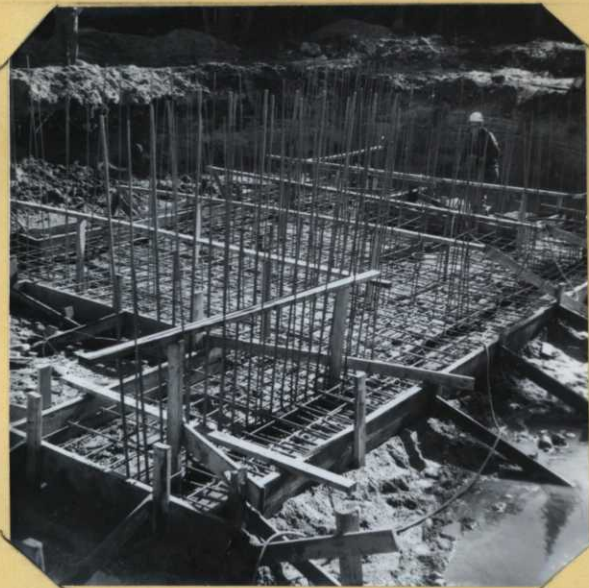
Corn strips at Melander's Field.
Fallow strips were seeded to winter
wheat and rye during the fall.
R1-14 JEF



Tractor Operator Carl Petersen
showing off some of our "Iowa" corn.
Much of the corn was hand picked by
Job Corpsmen during the fall.
R1-17 JEF



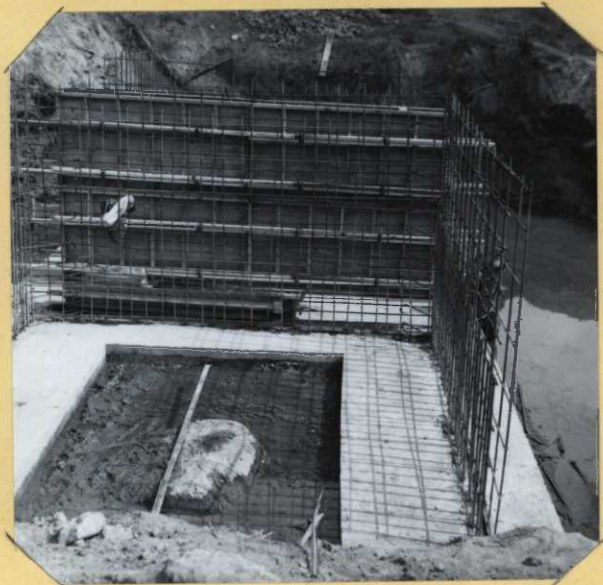
Mr. Petersen with a specimen of one of
our "genetic giants"; (incidentally, Carl
is no midget at 6' 1"). R2-6 JEF



Reinforcing steel work for base pad.
R1-7



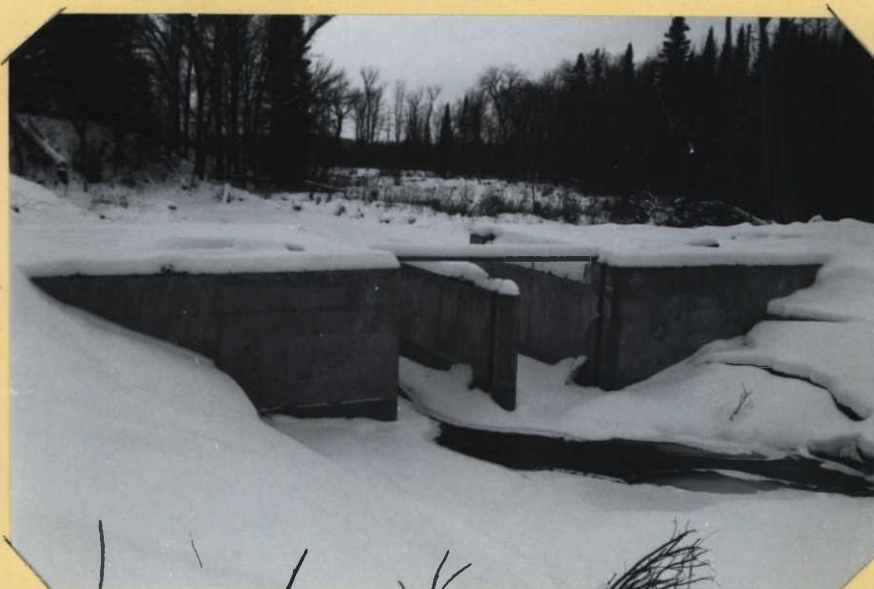
Lowering water around base pad after
7 day inundation "cure" period for
concrete. R1-8



Forming and steel work for wing-walls.
R1-9

OGEMASH CONTROL STRUCTURE
(Egg River)

Structure will impound 54 acres
of marsh and water on the Egg
River between Little Flat and
Lost Lake.

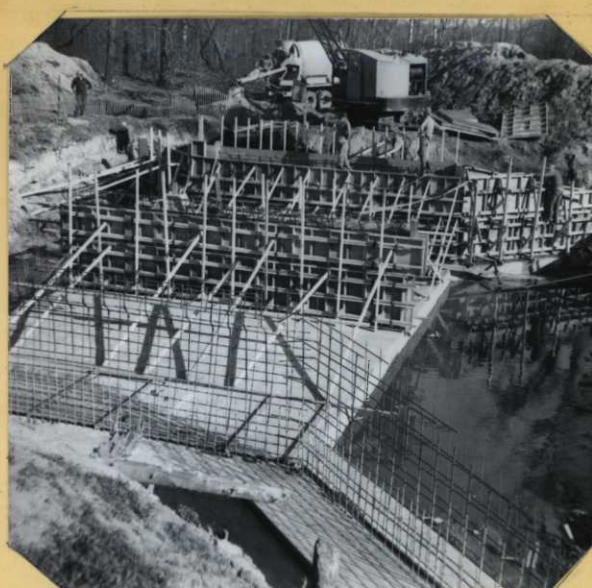


Completed two-bay (10') structure. Job Corps to construct
wooden deck during F.Y. 1968. R1-10

JEF



Cement work completed for wing-walls and one-half of base pad. R1-1



Concrete pouring operations--east wall and center pier. R1-2



Reinforcing steel work nears completion prior to pouring concrete for deck. R1-11

RICE LAKE CONTROL STRUCTURE

(Ottertail River)

It was at this site where a Sioux Indian burial mound was discovered during initial construction phase in July. Six complete skeletons and several artifacts were unearthed. (see news release in Appendix)



Structure completed and opened for traffic on 12/23/66. Total of eight bays--46 feet long. R1-14

JEF



Pile driving during initial construction phase.
R1-4



Pouring cement for base pad.
R1-5



Pouring cement - west wing wall and center pier.
R1-6

FLAT LAKE CONTROL STRUCTURE
Egg River

This structure will enable us to maintain optimum water levels in both Big and Little Flat Lake. This will replace an old double culvert structure built in the 1930's by the CCC.



Three Bay (15') structure completed Sept. 1966
R1-9

JEF



Two of our better rice harvesters - George and Saraphine Martin sacking their days take of rice. They harvested nearly 300 lbs. of rice during one four hour period - sold for \$1.30 per lb.



Arden Hills Refuge Manager School group visited Tamarac Refuge May 14 & 15. Refuge Manager Hunt conducted the tour. School Director Wm. Green shown in foreground (with pipe).
R6-181 RKS



Job Corps Technician L. Koopman and Corpsmen cutting panels for mourning dove traps.
R3-15 JEF



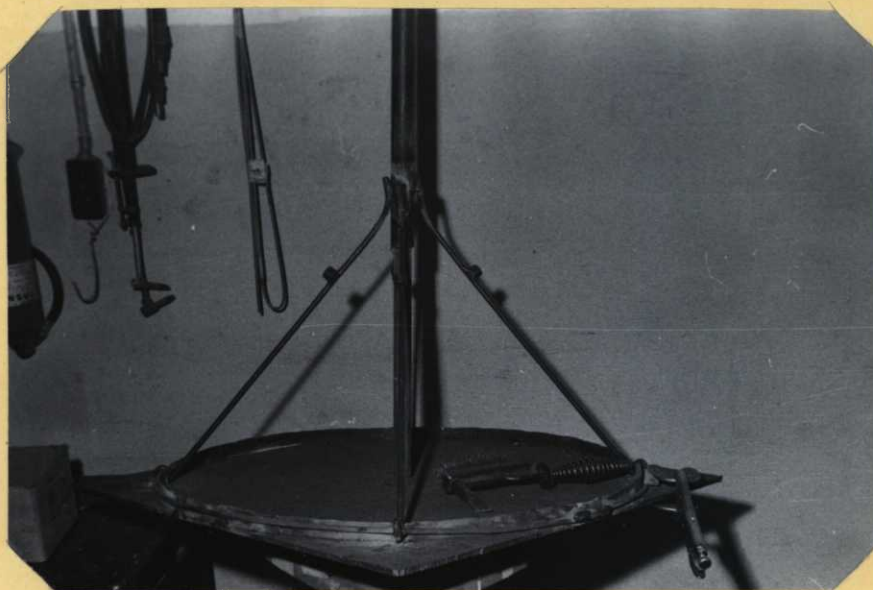
Corpsmen assembling trap panels.
R3-16 JEF



Corpsmen proudly display their finished product.
R3-17 JEF



Corpsman welding mallard nesting baskets at refuge
htqrs. Corpsman "Catfish" - good welder but restless.
R1-1 NBN



Jig used in welding up the baskets - one completed
frame in place.
R1-3 NBN



Second crew set up at refuge
htqrs. in order to get 400 out
by 3/1/67 for the NPWRC. Boys
supervised by refuge personnel.
Used 2400 l.ft. of surplus rods
for braces. Training provided
both horizontal and vertical
welding by mounting jig upright.
Photo at left - of Corpsman
Robinson - good welder and pro-
duction very good.
R1-4 NBN

TAMARAC JOB CORPS WORK PROJECT

Garage Construction at Assistant Manager's Residence



Studs up and enclosed with "buffalo board". R2-2



Rafters added. R2-3



Roofing nears completion. R2-4



Project completed. Two-stall, 24X24 with fiberglass doors. R2-5



"THAR SHE BLOWS" 200 lbs. AN/FO
Tam. JCCC Photo



Instant pothole in previously closed peat marsh.
Job Corps blasted over 300 potholes during 1966.
Tam. JCCC photo



Level ditching project on Egg River near confluence with
Ottertail River. Nearly two miles of this development - 1966
R1-12 JEF

3-1750
Form NR.
(Rev. March 1953)

W A T E R F O W L

REFUGE Tamarac

MONTHS OF September TO December, 1966

(1) Species	(2) Weeks of reporting period									
	: 8/28-9/3	: 9/4-9/10	: 9/11-17	: 9/18-24	: 9/25-10/1	: 10/2-8	: 10/9-15	: 10/16-22	: 10/23-29	: 10/30-11/5
	: 1	: 2	: 3	: 4	: 5	: 6	: 7	: 8	: 9	: 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	350*	350	350	600	650	650	600	600	600	600
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	8,000	8,000	10,000	11,000	12,000	13,000	15,000	10,000	5,000	2,000
Black					50	100	200	100	25	
Gadwall										
Baldpate	80	80	80	100	200	200	300	400		
Pintail			20	30	50	50	20	10		
Green-winged teal	=	100	200	200	20	100	50			
Blue-winged teal	4,000	4,000	4,500	5,000	1,000	200				
Cinnamon teal										
Shoveler										
Wood	7,000	5,000	3,000	2,000	2,000	400	400	150		
Redhead									1,500	
Ring-necked	3,000	3,000	3,000	3,000	13,000	15,000	15,000	6,000		
Canvasback								200	1,500	
Scaup					500	1000	6000	500		
Goldeneye						50	200	100		
Bufflehead										
Ruddy										
Other										
Coot:		500	2,000	4,500	15,000	25,000	8,000	7,000	500	
Int. Dup. Sec.,		* Includes 200 captive plus 150 1966 Goslings								

Most all lakes froze during this period with exception of portions of Otter Tail River.

Wash. D. C. 20540

3 -1750a

Cont. NR

(Rev. March 1953)

WATERFOWL (Continuation Sheet)

REFUGE TamaracMONTHS OF September TO December, 19 66

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total
	11/6-12 : 11	11/13-19 : 12	11/20-26 : 13	11/27-12/3 : 14	12/4-10 : 15	12/11-17 : 16	12/18-24 : 17	11/25-31 : 18		
Swans:										
Whistling	100	100							300	
Trumpeter										
Geese:										
Canada	600	200*	200	200	200	200	200	200	51,450	
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	400								765,800	
Black									3,325	
Gadwall										
Baldpate									10,080	
Pintail									1,260	
Green-winged teal									5,950	
Blue-winged teal									130,900	
Cinnamon teal										
Shoveler										
Wood									139,650	
Redhead									3,000	
Ring-necked									392,000	
Canvasback									3,400	
Scaup									56,000	
Goldeneye									2,450	
Bufflehead										
Ruddy										
Other										
* Captive flock (Pinioned, one & two year olds & some Release birds)										
Coot:									346,500	

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	300	100	
Geese	51,450	450*	
Ducks	1,382,915	50,000	
Coots	346,500	30,000	

* Migrants plus locally raised geese

SUMMARY

Principal feeding areas Chippewa and Flat Lake

Fields (Geese) Rice beds in No. Chippewa - Big & Little Flat Lakes (Ducks)

Principal nesting areas

Reported by

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

(Nov. 1945)

Refuge.....Tamarac

Months of September to December 1966

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:	Present	Sept. 1								
Common Loon	50	"	No Data		2	10/29				
Great Blue Heron	100-200	"	"	"	1	10/1				
Pied-Billed Grebe	100-200	"	"	"	No Data					
Common Merganser	5	9/20	"	"	"	"				
Hooded Merganser	1	9/20	"	"	"	"				
II. Shorebirds, Gulls and Terns:	Present	Sept. 1st								
Herring Gull	"	"	No Data		No Data					
Ring-bill Gull	"	"	"	"	"	"				
Killdeer	"	"	"	"	"	"				
	"	"	5	"	"	"				
	"	"	52	"	"	"				
	"	"	No Data		No Data					
	"	"	"	"	"	"				

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> :	Present Sept. 1				
Mourning dove	"	No Data	No Data		
White-winged dove					
IV. <u>Predaceous Birds</u> :					
Golden eagle	Present Sept. 1	25	Nov. 1	1	Nov. 24
Duck hawk					
Horned owl	Present Sept. 1	Common	Here year around		
Magpie	"	2	Nov. 2	1	Nov. 5 (Rare Migrants)
Raven	"	"	"	"	"
Crow	Present Sept. 1	Small numbers here throughout the year			
Reported by.....					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750a
Form NR-
(Sept. 1960)

WATERFOWL WINTER KILL SURVEY

Refuge Tamarac National Wildlife Refuge

Year 1966

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
1	126	300	Mallard (115), Ringneck (112), Coot (80), Bluewing Teal (42), Redhead (7), Pintail (12), Baldpate (5).	373	80	453	150	540
2	50	150	Mallard (42), Ringneck (38), Coot (15)	95	20	115	100	230

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

3-1753

Form 1-3
(June 1945)

BIG GAME

Refuge TamaracCalendar Year 1966

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												M/F
White-tail Deer	30,000	315	241	0	0	0	5	10	5			1340	1050	
Black Bear	"	Unknown										10-20	10-20	115/100
Moose	"	Unknown										1-2	1-2	

Remarks:

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge Tamarac National Wildlife RefugeYear 19 66Botulism None

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease Pesticidal PoisoningSpecies affected Canada Geese (Captive flock)

Number Affected	Actual Count	Estimated
Species		
10	10	_____
_____	_____	_____
_____	_____	_____

Number Recovered All

Number lost _____

Source of infection Primarily Liver

Water conditions _____

Food conditions Corn received from Union Slough

Refuge in Dec. 1965 was found to be contaminated, 5 samples of corn tested at No. Dakota State Univ. were found to have from 95 to 210 ppm of Chlorinated Hydrocarbon. Most geese had abnormally enlarged livers, and fatty tissue in one contained 310 ppm of the Chlorinated Hydrocarbon Compound. (Specific pesticide could not be isolated and identified.)

Remarks
All birds sent for analysis had lethal concentrations of pesticide residue. Complete report submitted to Regiona Office on 2/28/66.

3-1756
Form NR-6
(April 1966)

FISH

Refuge Tamarac National Wildlife Refuge Year 1966

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Northern Pike	Good in Tamarac and Chippewa	Unknown		None	None	None		
Large mouth Bass	Poor in all lakes, but improving in Pine	Unknown		"	"	80* Brood Fish	Pine Lake	
Walleye	Poor in all lakes	Unknown		"	"			
Crappie	Fair in Wauboose	Unknown		"	"			
Bluegill	Good at Mitchell Dam (Rice Lake)	Unknown		"	"			
Bullhead	Abundant in Flat, Egg, Chippewa, & Tamarac	Unknown		"	"			

REMARKS: * Minn. Dept. of Conservation (Fisheries) put in 80 Brood Fish in Pine Lake in hopes of establishing a source of stock for restocking purposes. This is not an attempt to re-establish Bass in Pine Lake for fishing, but as an available source of fry.

3-1757

Form NR-1

(April 1946)

PLANNINGS

(Marsh - Aquatic - Upland)

Refuge.....Tamarac

..Year 194~~4~~..66

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Wild Rice	Lower Egg	15#/Acre	50 Acres	800# Seed	9/15/66			
	Little Rice	15#/Acre	50 Acres	*800# Seed	9/15/66			
	Balsam	15#/Acre	50 Acres	800# Seed				

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

*400# Aerially -400# hand planted, Lower Egg and Balsam both Aerially seeded

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

Permittee

CULTIVATED CROPS - HAYING - GRAZING

Refuge Tamarac National Wildlife Refuge

County Becker

State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Oats	84	3,507	28	1,169			112		
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 7 Haying Operations 12 Grazing Operations

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa (Perm.)	389.0	200	972.50	1. Cattle				
Straw	15.6		31.20	2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild	1481.	277	370.00	2. Acreage Cultivated as Service Operation				157

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1758

Form NR-8

(Rev. Jan. 1956)

Fish and Wildlife Service

Branch of Wildlife Refuges

Refuge

CULTIVATED CROPS - HAYING - GRAZING

Refuge Tamarac National Wildlife RefugeCounty BeckerState Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Oats					14	140 bu.	14	Winter Wheat	66
Winter Wheat			11	200 bu.	24	360 bu.	35	Alfalfa	32
Buckwheat					10	100 bu.	10	White Cliver	17
Sweet Corn					4	80 bu.	4	Rye	5
Field Corn			7	300 bu.	33	1320 bu.	40		
Millet			10	300 bu.	16	300 bu.	26		120
							129		
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

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Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Tamarac National Wildlife RefugeMonths of January through December, 19566

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Oats	562	2438	3000		30	1500		1470	50	1420	None
Corn (Shelled)	205	400	605	405*	---	54	---	146	---	146	None
Corn (Ear)	---	300	300			200	200	100	---	100	None
Rye	50	---	50		50		50	---			
Barley	30	100	130		---	30	30	100	---	100	None
Wheat	---	200	200		140	20	160	40	---	40	None
Millet (Red Proso)	---	300	300					300	25		275
Milo	---	230	230			30	30	200		200	None

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge Headquarters and Lunde Granary(10) Remarks 405 bu. Destroyed (205 on hand from Union Slough Refuge in 1965 found contaminated with pesticides
200 bu. from Tewaukon found to be mouldy

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

VARIETY	ON HAND OR IN TRANSIT	RECEIVED DURING PERIOD	TOTAL	GRAIN DISPOSED OF				ON HAND OR IN TRANSIT	DISPOSED OF DURING PERIOD		REMARKS
				SHIPPED	TRANSFERRED	FEED	OTHER		TO	FOR	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

REFUGE GRAIN REPORT

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Year 19 66

[illegible]

3-1760
Form NF 10
(April 1966)

HAYING AND GRAZING

Refuge Tamarac National Wildlife Refuge Year 1956

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
Stanley Birky-	Tam. 101	30,31			75.0T	7/1/66 - 9/15/66	2.50	187.50	
Asel Dickenson	Tam. 100	26,27,29			25.2W	6/20/66- 9/1/66	2.50	63.00	
Fingal Fingalson	Tam. 104	17			26.3T	6/20/66- 9/1/66	2.50	65.75	
Leon Hanson	Tam. 94	2, 36			22.0+	7/1/66 - 9/15/66	2.50	55.00	
Lester Hanson	Tam. 95	7, 38			33.4W	7/1/66 - 9/15/66	2.50	83.50	
Ray Hanson	Tam. 96	8			43.0+	6/20/66- 9/1/66	2.50	107.50	
Kieth Krause	Tam. 93	1			45.9+	6/20/66-9/1/66	2.50	124.75	
Henry Moser	Tam. 99	16, 33			54.8+	6/20/66- 9/1/66	2.50	137.00	
Earl Murray	Tam. 98	17			35.0+	6/20/66- 9/1/66	2.50	87.50	
Carl Peterson	Tam. 91	L. Krause			10.0W	7/1/66 - 9/15/66	2.50	25.00	
Milton Swedberg	Tam. 97	8			79.5W	6/20/66- 9/1/66	2.50	198.75	
Norman Syverson	Tam. 103	30, 36,37			87.0+	7/1/66 - 9/15/66	2.50	217.50 29	

Totals:

Acreage grazed.....

Animal use months.....

Total income Grazing.....

Acreage cut for hay.....

Tons of hay cut 537.1

Total income Haying 1342.50

TIMBER REMOVAL

Refuge.....Tamarac National Wildlife Refuge

Year 194.66

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
D. Thompson	Tam. 90	area 1 & 3	166	151.72 cds	3.00	455.16		Jackpine
				2.90 cds	6.00	17.40		Jackpine
				2.50 MBF	12.00	30.00		Jackpine
				194.18 MBF cds	3.00	582.54		Balsam Fir
				71.07 cds	4.75	337.58		Spruce
				39.52 cds	.75	29.64		Aspen
C Jenson	Tam. 89	Area 4	18	5.00 MBF	12.00	60.00		Jackpine
				1.00 MBF	4.00	4.00		Aspen
				.60 MBF	8.00	4.80		Tamarack
				10.60 MBF	8.00	84.80		Balsam Fir
				6.00 cds	3.00	18.00		Balsam Fir
				23.50 cds	2.00	47.00		Tamarack
C Jenson (Cont)	Tam. 107	Area 4	7	6.00 MBF	10.00	60.00		Jackpine Logg
				3.00 MBF	16.00	48.00		White Pine logs
				2.00 MBF	14.00	14.00		Balsam Fir
				1.00 MBF	3.50	3.50		Aspen
				.70 MBF	4.00	2.80		Ash
				.80 MBF	4.00	3.20		Elm
				6.00 cds	.75	4.50		Aspen
				30.00 cds	.25	7.50		Mix Hdwd
				2.00 cds	2.00	4.00		Birch
				15.00 cds	.50	7.50		Aspen

Total acreage cut over.....

Total income.....

No. of units removed B. F.

Method of slash disposal.....

Cords.....

Ties.....

.....

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Becker Co. Welfare Board		Area 2	75	402.89 cds 15.00 cds 259.08 cds	2.00 .50 1.00	805.78 7.50 259.08		Jack pine Mxd., dead & Down Aspen
V. Dodd	Tam. 61	Area 3	1	2.125 MBF	8.00	17.00		Balsam Fir
John Doe et al	--	--	--	55.36 cds 3" 49.82 cds 5"	10.00 12.00	553.60 597.84		Tamarack Tamarack

Method of slash disposal.....
Total converted to BF 697345 BF
Total converted to cords 1394.89 cds

ANNUAL REPORT OF PERSTICIDE APPLICATION

Proposal Number

1

Reporting Year

1966

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7-7-66	Hoary Alyssum	Unit # 31 Field #5	20	M.C.P.A. 48% Amine	40#	2#/ acre	water 68#/acre	Ground, power, PTO type

10. Summary of results (continue on reverse side, if necessary)

Received a near complete kill. Plant was in flowering stage at the time of application and the temperature was in the Mid 80s

Indian Burial Site Is Uncovered

★ ★ ★

★ ★ ★

★ ★ ★

★ ★ ★

★ ★ ★

MITCHELL DAM FIND IS FIRST SINCE MAY, 1935

Five skeletons, pieces of pottery and several unusual artifacts were uncovered Monday afternoon just below the surface of the road at Mitchell Dam in Height of Land township, 20 miles northeast of Detroit Lakes.

A dragline operator, Wilbur Lueck of Deerwood, working for the Barry Construction company of Mora, sub-contractors for a bridge and dam project, discovered a skull during his work and stopped work to enable interested officials to probe the area.

The Mitchell Dam area is located at the northeast corner of Height of Land lake, near the southern outlet of Rice lake,

along the Otter Tail river. It is located in the southeast corner of Tamarac National Wildlife Refuge.

★ According to Otto Zeck, curator of the Becker County Historical museum at Detroit Lakes, and who has been involved in every major archeological work in the area, stated that this is the first Indian burial site uncovered since May 22-23, 1935.

Refuge officials, James Frates, assistant manager, and Robert Seemel, forester, were called and Becker County Sheriff James Larson, who investigated.

Sheriff Larson examined the skull and suggested that Lueck make a few more passes with the dragline. It was during this operation that several bones and

skulls were found together.

A call was put to Zeck, who in turn notified other members of the historical society. They spent most of the afternoon carefully searching the area.

Refuge officials allowed the museum representatives to select artifacts for the museum. They included the following:

★ A small bone needle in perfect shape, which Zeck called "the smallest I've ever seen."

★ A handle of a jar, which is only the second one ever found in Becker county. The other one was found in a mound south of Frazee in 1950.

★ A bone implement nine inches long, slightly curved, with three holes drilled into it. It is polished and shows signs of use.

Zeck could not identify this implement.

★ A bracelet marked with lateral lines with two holes drilled at each end.

★ Four tiny cones, each about an inch long, hollowed and pointed at the ends. These could not be identified either.

★ Two tiny copper beads.

★ Five small arrowheads.

★ An object about four inches long, with an "X" marked along one side. Zeck suggested that it resembled "squaw dice," but said it might have served as a handle.

There were also several pieces of birch bark that had survived the long burial and an awl four inches long.

Curator Zeck explained the reason for the burial. The Sioux

Indians placed their dead on a platform in a tree and then when they returned to the site, they gathered the bones, placed them all on the ground and constructed a mound above them.

When the road was first built at Mitchell Dam, crew men must have cut through the mound added fill and completed the road without disturbing the skeletons.

This week work is progressing on constructing a new bridge and control structure at Mitchell Dam to control the water level in Rice lake to protect the wild rice and to improve natural wildlife habitat.

★ The Mitchell Dam area is rich in Indian lore. Zeck has been engaged in several digs in this area. ... Continued on Page 4, Col.

BURIAL SITE....

... Continued From Page 1

area, one with Dr. Lloyd Wilford, who was then archeologist for the University of Minnesota.

It was also near this same site that Zeck uncovered a firesteel that has been called a Viking implement and ties in with the theory that Vikings were here in 1362. Zeck uncovered the steel in

1940, about 25 feet southwest of the recent site.

This was the site of the largest all-season Indian village in the area. Family shelters of birch-bark were maintained on high ground and the shallow water here provides the only crossing for several miles either way on the river.

First known Indian tribes were the heyennes, then came the Santee Sioux, and in 1750, the Chippewas gained possession of this area.

Zeck reasoned that the burial found Monday was Sioux, therefore it is at least 200 years old and possibly older.

★ The last bundle burial, or "secondary burial" was discovered by the Detroit Lakes archeologist in 1935 at the end of Corbett Road when a new road was built on North Shore Drive.

He uncovered a mound and discovered a similar burial with 10 skeletons in this one. There were no artifacts with those. He explained that Indians buried possessions with the dead, but that many did not own much at the end of their road.

At the dig Monday he was interested in the pieces of pottery and carefully collected all pieces. He is working this week sorting them and attempting to put them together.

He said that they were placed in the graves with the dead and that the bottom was broken so that "evil spirits" could not gather there.

He placed the ages of the people at the Mitchell Dam burial at fairly young, with none of them 40 years of age. He noted that the skulls revealed that the cranial and sagittal sutures had not fused, although a complete study of the entire skeleton would have revealed more information.



Wilbur Luech of Deerwood (left) shows Sheriff James Larson where he discovered the first skull that led to the finding of five skeletons. Next to Luech is James (Jim) Frates, assistant manager of Tamarac National Wildlife Refuge; Sheriff Larson, and I. G. Anderson of Muscatine, Iowa, contracting supervisor for Robertson Construction Company.

★ ★ ★

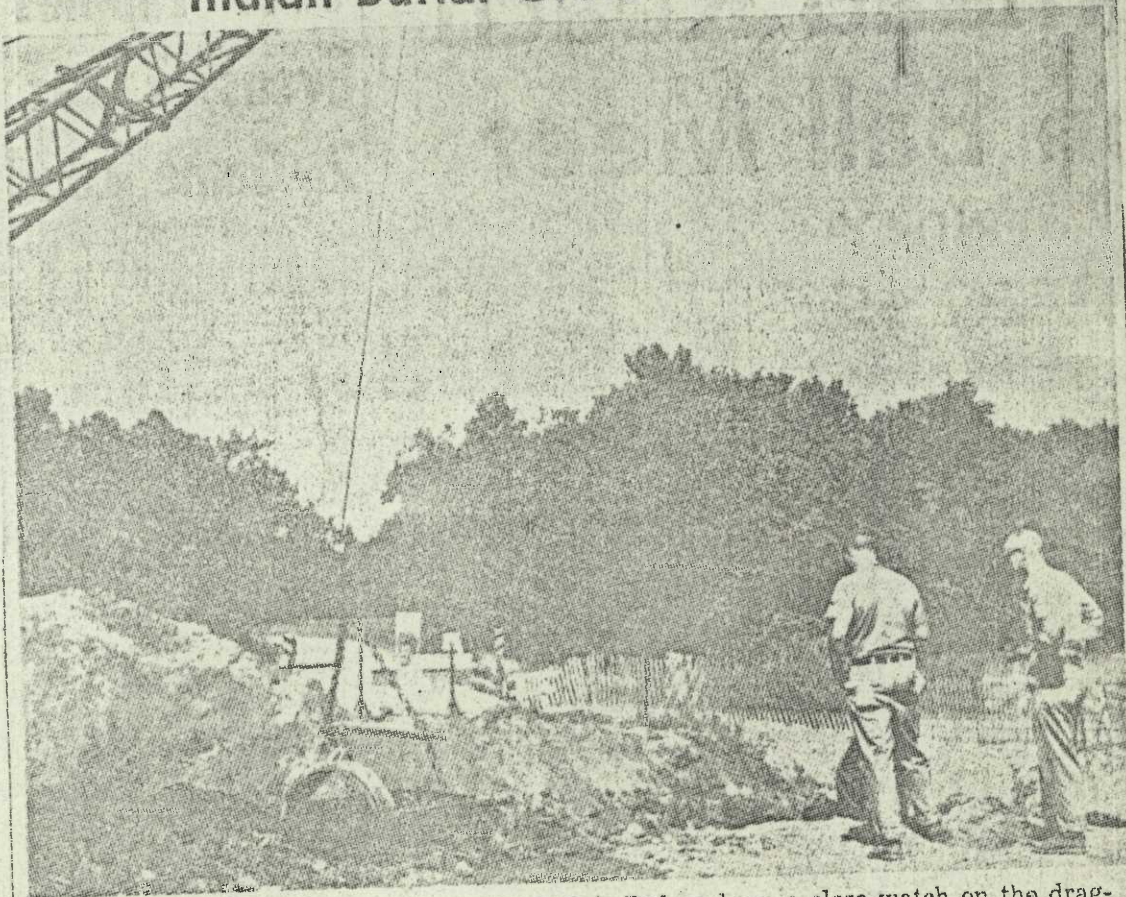
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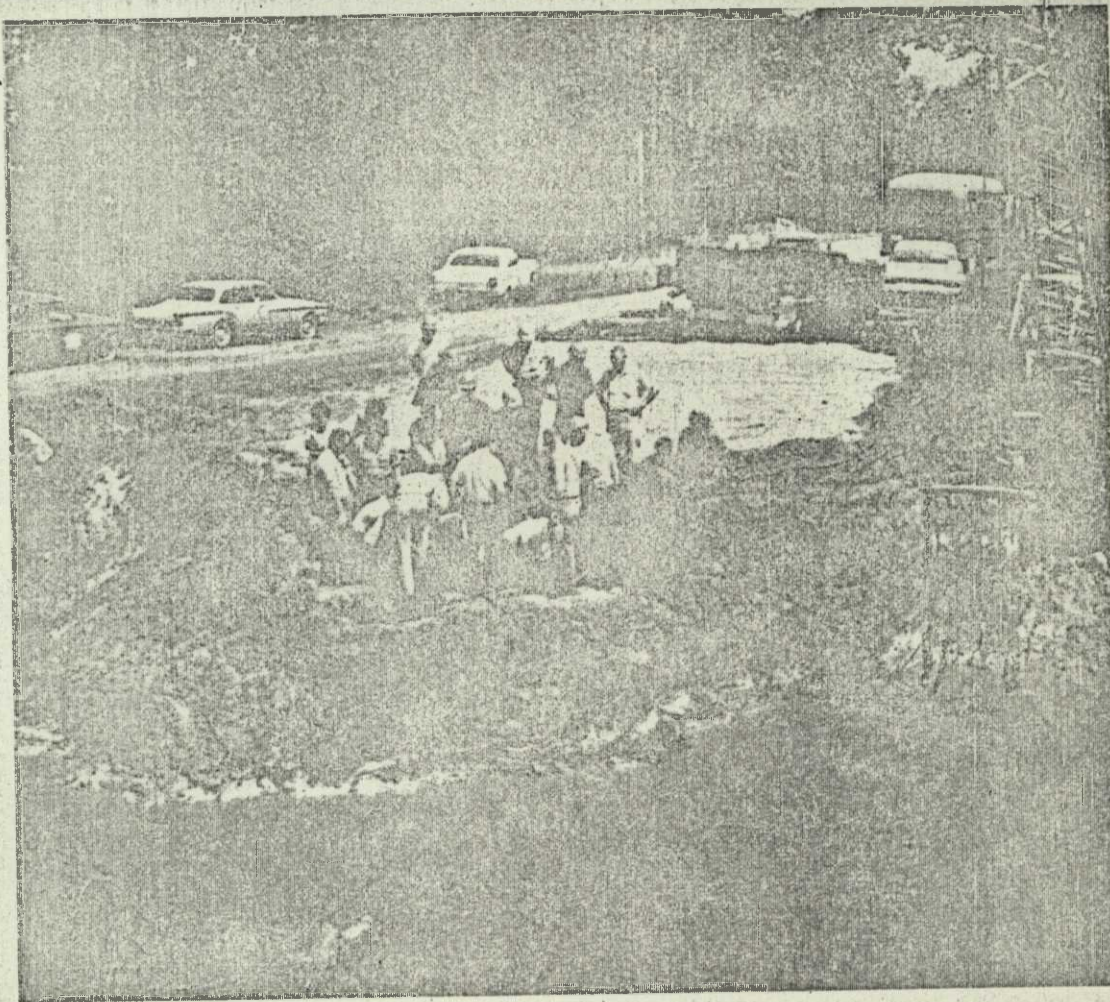


Members of the Becker County Historical society of Detroit Lakes supervised the digging at the "bundle burial" site. They are, left to right, Herb Colmer, Frank Long and Otto Zeck. Behind them are members of the Job Corps center who assisted in the spade work during the digging. Shortly after this photo was taken, a fifth skull was uncovered by the dragline operator.

Indian Burial Ground Discovered



Two officials of Tamarac National Wildlife Refuge keep a close watch on the drag-line just before the Indian burial site was uncovered on Monday, July 18, at Mitchell Dam. They are James Frates, assistant refuge manager (left) and Robert Seemel, forester.



The site of the discovery of five skeletons is shown in this view looking east from the bridge at Mitchell Dam. They were found by the drag line operator at the right. Members of the Becker County Historical Society, Tamarac Refuge and Tamarac Job Corps Conservation center, as well as interested spectators, can be seen around the discovery site during the search for skeletons and artifacts.

Becker Co. Record July 21, 1966